

حمل الآن

مجاناً وحصرياً

امتحانات رقم (1)

الترم الاول

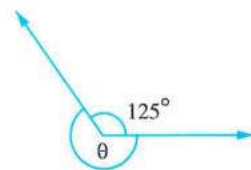


**1 Choose the correct answer from those given :**

- (1) The simplest form of the expression $\frac{4+4i}{i}$ is
- (a) $-4i+4$ (b) $1-4i$ (c) $-4i$ (d) $1+4i$
- (2) The two roots of the equation : $x^2 - 4x + k = 0$ are equal if $k = \dots\dots\dots$
- (a) 1 (b) 4 (c) 8 (d) 16
- (3) If $(1+i)$ is one of the two roots of the equation : $x^2 - 2x + 2 = 0$, then the second root is
- (a) $1-i$ (b) $1-2i$ (c) $1+2i$ (d) $1+i$
- (4) The quadratic equation which its two roots are 4 , -3 is
- (a) $x^2 - 7x - 6 = 0$ (b) $x^2 - x - 12 = 0$
 (c) $x^2 + x - 6 = 0$ (d) $x^2 + 7x + 6 = 0$
- (5) The function $f : f(x) = x - 2$ is positive in the interval
- (a) $]-2, \infty[$ (b) $]-2, 2[$ (c) $]-2, \infty[$ (d) $]2, \infty[$
- (6) If $x = 3$ is one of the roots of the equation : $x^2 + mx - 27 = 0$, then $m = \dots\dots\dots$
- (a) -3 (b) 3 (c) 6 (d) 9

2 Choose the correct answer from those given :

- (1) The S.S. of the inequality : $x^2 - 5x + 6 \leq 0$ is
- (a) $]2, 3]$ (b) $[2, 3[$ (c) $[-2, 3]$ (d) $[2, 3]$
- (2) In the opposite figure :
- $m(\angle \theta) = \dots\dots\dots^\circ$
- (a) 75 (b) 90
 (c) 235 (d) 275
- (3) The positive measure of the angle $-270^\circ = \dots\dots\dots^\circ$
- (a) 90 (b) 130 (c) 180 (d) 200
- (4) The angle of measure $30^\circ = \dots\dots\dots$ with radian measure.
- (a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{6}$ (d) $\frac{3\pi}{2}$
- (5) If $\tan(180^\circ + \theta) = 1$ where θ is the smallest positive angle , then $\theta = \dots\dots\dots^\circ$
- (a) 30 (b) 45 (c) 60 (d) 120



(6) The range of the function $f : f(\theta) = 2 \sin(3\theta)$ where $\theta \in [0, \pi]$ is

- (a) $[-1, 1]$ (b) $[-2, 2]$ (c) $[-2, 2]$ (d) $[-3, 3]$

3 Choose the correct answer from those given :

(1) If $\sin \alpha = \cos \beta$ where α, β are two acute angles, then $\tan(\alpha + \beta) = \dots\dots\dots$

- (a) $\frac{1}{\sqrt{3}}$ (b) 1 (c) $\sqrt{3}$ (d) undefined

(2) The ratio between the perimeter of two similar polygons is 1 : 4, then the ratio between two corresponding sides =

- (a) 1 : 2 (b) 1 : 4 (c) 4 : 1 (d) 1 : 16

(3) If $\Delta ABC \sim \Delta XYZ$, $AB = 3XY$, then the area of (ΔABC) : the area of (ΔXYZ) =

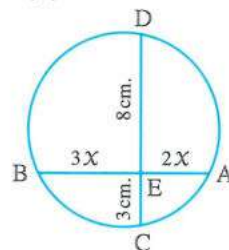
- (a) 9 : 1 (b) 1 : 9 (c) 1 : 3 (d) 3 : 1

(4) In the opposite figure :

If $CE = 3$ cm., $DE = 8$ cm.

, then $x = \dots\dots\dots$ cm.

- (a) 2 (b) 3
(c) 6 (d) 8



(5) If polygon $ABCD \sim$ polygon $XYZL$, $AB = (k - 1)$ cm., $BC = 6$ cm., $XY = 5$ cm., $YZ = 15$ cm., then $k = \dots\dots\dots$

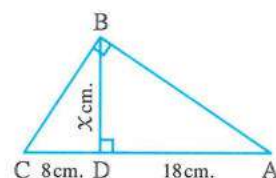
- (a) 3 (b) 6 (c) 9 (d) 15

(6) In the opposite figure :

If $AD = 18$ cm., $DC = 8$ cm.

, then $x = \dots\dots\dots$ cm.

- (a) 8 (b) 12
(c) 15 (d) 18



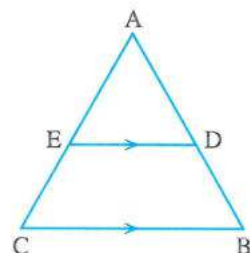
4 Choose the correct answer from those given :

(1) In the opposite figure :

$$\overline{DE} \parallel \overline{BC}, \frac{AE}{AC} = \frac{4}{7}$$

, then $\frac{AB}{AD} = \dots\dots\dots$ cm.

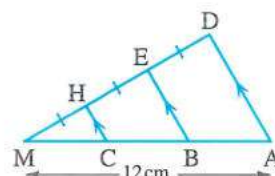
- (a) $\frac{2}{7}$ (b) $\frac{7}{4}$
(c) $\frac{4}{7}$ (d) 1



(2) In the opposite figure :

$\overline{AD} \parallel \overline{BE} \parallel \overline{CH}$, $DE = EH = HM$, $AM = 12$ cm.
 , then $AC = \dots\dots\dots$ cm.

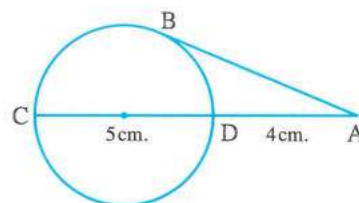
- (a) 12 (b) 8
 (c) 6 (d) 3



(3) In the opposite figure :

If $\overline{AB}$ is a tangent to the circle
 , $AD = 4$ cm. , $CD = 5$ cm.
 , then $AB = \dots\dots\dots$ cm.

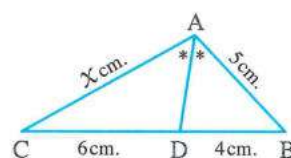
- (a) 36 (b) 16 (c) 9 (d) 6



(4) In the opposite figure :

$\overline{AD}$ bisects angle A , if $AB = 5$ cm.
 , $BD = 4$ cm. , $DC = 6$ cm.
 , then $x = \dots\dots\dots$ cm.

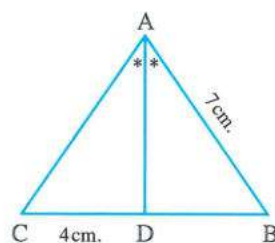
- (a) 7.5 (b) 6.5 (c) 5.5 (d) 4.5



(5) In the opposite figure :

If $AB = 7$ cm. , $DC = 4$ cm.
 , $\overline{AD}$ bisects angle A , $m(\angle B) = m(\angle C)$
 , then the perimeter of triangle ABC = $\dots\dots\dots$ cm.

- (a) 56 (b) 22
 (c) 25 (d) 11



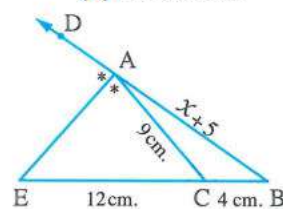
(6) In $\triangle ABC$ if $\overline{AD}$ bisects angle A , then $AB \times CD = \dots\dots\dots$

- (a) $AC \times BD$ (b) $(AD)^2$ (c) $AD \times BD$ (d) $AC \times AB$

(7) In the opposite figure :

$BC = 4$ cm. , $AC = 9$ cm. , $\overline{AE}$ bisects angle A externally
 If $CE = 12$ cm.
 , then $x = \dots\dots\dots$ cm.

- (a) 4 (b) 5 (c) 7 (d) 12

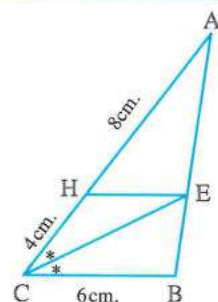


5 Determine the sign of the function $f : f(x) = x^2 - 4$

6 In the opposite figure :

ABC is a triangle in which $\overline{CE}$ bisects angle C
 , where $AH = 8$ cm. , $HC = 4$ cm.
 , $BC = 6$ cm.

Prove that : $\overline{EH} \parallel \overline{BC}$





1 Choose the correct answer from those given :

(1) If x, y are real numbers and $(1 + i^4)(1 - i^7) = x + yi$, then $x + y = \dots\dots\dots$

- (a) 4 (b) 3 (c) 2 (d) 1

(2) If $f(x) = a \cos(bx)$ where $a > 0, b < 0$ its period $\frac{\pi}{2}$ its range $[-1, 1]$

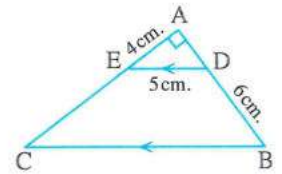
, then $\frac{a}{b} = \dots\dots\dots$

- (a) $-\frac{1}{4}$ (b) $\frac{1}{4}$ (c) $-\frac{1}{2}$ (d) $\frac{1}{2}$

(3) In the opposite figure :

BC = $\dots\dots\dots$ cm.

- (a) 10 (b) 12
(c) 13 (d) 15



(4) The sign of the function $f : f(x) = 3 - x$ is negative at $\dots\dots\dots$

- (a) $x > 3$ (b) $x \leq 3$ (c) $x < 3$ (d) $x = 3$

(5) The angle of measure $45^\circ + (4n + 1) \times 90^\circ$ lies in the $\dots\dots\dots$ quadrant ($n \in \mathbb{Z}$)

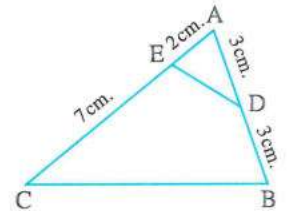
- (a) first (b) second (c) third (d) fourth

(6) In the opposite figure :

If the area of $\triangle ADE = 20 \text{ cm}^2$

, then the area of the figure DBCE = $\dots\dots\dots \text{ cm}^2$

- (a) 20 (b) 140
(c) 160 (d) 180

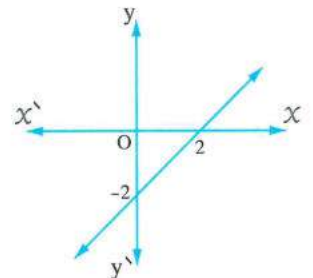


2 Choose the correct answer from those given :

(1) The opposite figure represents a first degree function of x

, then the function is positive in the interval $\dots\dots\dots$

- (a) $[-2, \infty[$
(b) $]-\infty, -2[$
(c) $]-\infty, 2[$
(d) $]2, \infty[$



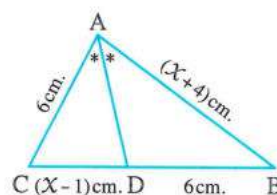
(2) If θ is an acute positive angle and $\frac{\sin(\theta + 30^\circ)}{\cos 2\theta} = 1$, then $\theta = \dots\dots\dots$

- (a) 30° (b) 35° (c) 5° (d) 20°

(3) In the opposite figure :

$x = \dots\dots\dots$ cm.

- (a) 6 (b) 5
(c) 8 (d) 10



(4) If the product of the two roots of the equation : $(k-2)x^2 - 6x + 12 = 0$ is 3 , then $k = \dots\dots\dots$

- (a) zero (b) 4 (c) 6 (d) 38

(5) If the range of the function $f(\theta) = 3x \sin \theta$ is $[-9, 9]$, then $x = \dots\dots\dots$

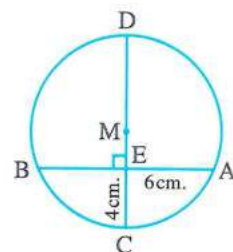
- (a) - zero (b) - 3 (c) ± 3 (d) 3

(6) In the opposite figure :

$\overline{CD}$ is a diameter , $AE = 6$ cm. , $CE = 4$ cm.

, then the radius length of the circle $M = \dots\dots\dots$ cm.

- (a) 9 (b) 4.5
(c) 6 (d) 6.5



3 Choose the correct answer from those given :

(1) The quadratic equation whose roots are 3 , - 5 is

- (a) $x^2 + 2x - 15 = 0$ (b) $x^2 - 2x - 15 = 0$
(c) $x^2 - 2x + 15 = 0$ (d) $x^2 + 2x + 15 = 0$

(2) If $\tan \theta = \frac{12}{5}$, where $180^\circ < \theta < 270^\circ$, then $\sin \theta = \dots\dots\dots$

- (a) $-\frac{5}{13}$ (b) $-\frac{12}{13}$ (c) $\frac{5}{13}$ (d) $\frac{12}{13}$

(3) If ratio between the lengths of two corresponding sides in two similar polygons is 5 : 3 and the difference between their areas is 32 cm^2 , then the area of the smaller polygon is cm^2

- (a) 18 (b) 50 (c) 32 (d) 16

(4) If M , $\frac{2}{M}$ are two roots of the equation : $ax^2 + bx + 12 = 0$, then $a = \dots\dots\dots$

- (a) 3 (b) 5 (c) 6 (d) 9

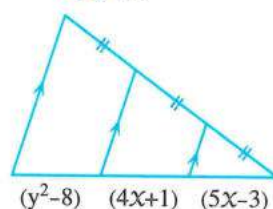
(5) If the length of an arc in a circle equals $\frac{3}{8}$ of its circumference , then the measure of the central angle subtending this arc in degrees equals

- (a) 30° (b) $67^\circ 30'$ (c) 135° (d) 43°

(6) In the opposite figure :

If $y > 0$, then $xy = \dots\dots\dots$

- (a) 9 (b) 12
(c) 20 (d) 30



4 Choose the correct answer from those given :

(1) The function $f : f(x) = ax^2 + bx + c$ has one sign on $\mathbb{R}$ if

(a) $b^2 - 4ac > 0$

(b) $b^2 - 4ac < 0$

(c) $b^2 - 4ac = 0$

(d) $b^2 - 4ac \geq 0$

(2) In the opposite figure :

$\overline{ED} \parallel \overline{BC}$, $AD : AB = 2 : 5$

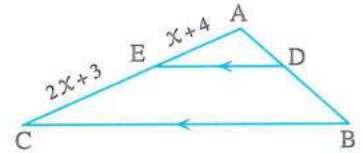
, then $x =$

(a) 8

(b) 6

(c) 4

(d) 2



(3) In the opposite figure :

M is a circle, $AE = 3$ cm.

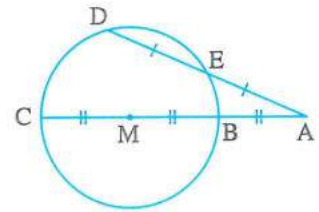
, then $CM =$ cm.

(a) $\sqrt{3}$

(b) 9

(c) $2\sqrt{6}$

(d) $\sqrt{6}$



(4) In the opposite figure :

If $m(\angle ADC) = m(\angle ACB)$

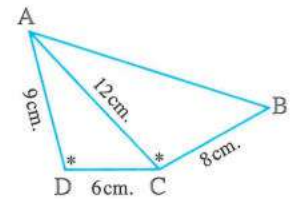
, then $AB =$ cm.

(a) 12

(b) 16

(c) 18

(d) 20



(5) In the opposite figure :

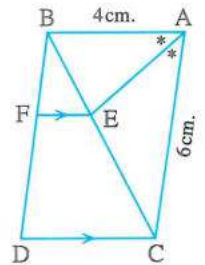
$\frac{BF}{FD} =$

(a) $\frac{2}{3}$

(b) $\frac{2}{5}$

(c) $\frac{3}{5}$

(d) $\frac{3}{2}$



(6) In the opposite figure :

If $\overline{ED} \parallel \overline{BC}$, $AE = 2$ cm.

, $EC = 3$ cm., $ED = 6$ cm.

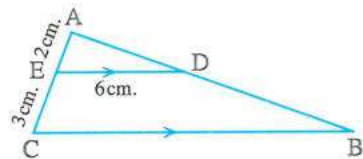
, then $BC =$ cm.

(a) 9

(b) 15

(c) 12

(d) 10



(7) The two similar polygons are congruent if the scale factor K satisfies

(a) $k = \frac{1}{2}$

(b) $k = 1$

(c) $k > 1$

(d) $0 < k < 1$

- 5 If L and M are the roots of the equation : $2x^2 - 3x - 1 = 0$, then form the quadratic equation whose roots are : $\frac{L}{M}$ and $\frac{M}{L}$

- 6 ABCD is a quadrilateral in which $AB = 6$ cm. , $BC = 9$ cm. , $CD = 6$ cm. , $AD = 4$ cm. , $\overrightarrow{AE}$ bisects $\angle A$ and intersects $\overline{BD}$ at E **Prove that** : $\overrightarrow{CE}$ bisects $\angle BCD$

3

Cairo Governorate



Mokattam Zone
ElMokattam Directorate

- 1 Choose the correct answer from those given :

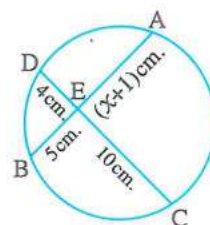
(1) In the opposite figure :

$EA = (x + 1)$ cm. , $EB = 5$ cm.

$ED = 4$ cm. , $EC = 10$ cm.

, then $x = \dots\dots\dots$ cm.

- (a) 9 (b) 5 (c) 7 (d) 13



- (2) If one of the two roots of the equation : $3x^2 - (k - 2)x + k^2 + 2k = 0$ is the multiplicative inverse of the other , then $k = \dots\dots\dots$

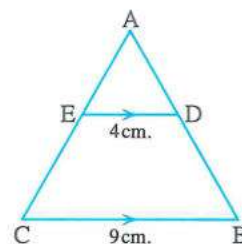
- (a) -3 , 1 (b) -3 , -1 (c) 3 , -1 (d) 3 , 1

(3) In the opposite figure :

If $\overline{DE} \parallel \overline{BC}$, $DE = 4$ cm. , $BC = 9$ cm.

, then $\frac{\text{area}(\triangle ADE)}{\text{the area of trapezium DBCE}} = \dots\dots\dots$

- (a) $\frac{16}{81}$ (b) $\frac{81}{65}$
(c) $\frac{65}{81}$ (d) $\frac{16}{65}$



- (4) The conjugate of the number $(5 - i)^2 i$ is $\dots\dots\dots$

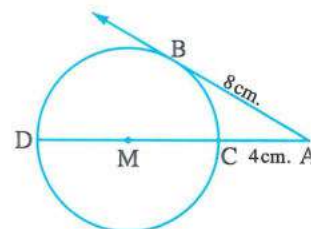
- (a) $5 + i$ (b) $24 - 10i$ (c) $24 + 10i$ (d) $10 - 24i$

(5) In the opposite figure :

$\overrightarrow{AB}$ is a tangent to the circle , $AB = 8$ cm. , $AC = 4$ cm.

, then the area of the circle M = $\dots\dots\dots$

- (a) 36π (b) 12π
(c) 6π (d) 16π



- (6) The solution set of the inequality : $x^2 - 4x - 5 \geq 0$ is $\dots\dots\dots$

- (a) $[-1, 5]$ (b) $\mathbb{R} - [-1, 5]$ (c) $]-1, 5[$ (d) $\mathbb{R} -]-1, 5[$

2 Choose the correct answer from those given :

- (1) If two roots of the equation : $X^2 + 5X + k = 0$ are different real , then k can not be

(a) 2 (b) 7 (c) 5 (d) 6

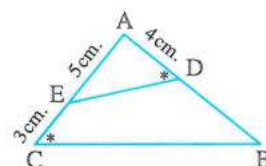
(2) In the opposite figure :

$m(\angle ADE) = m(\angle C)$, $AD = 4$ cm.

, $AE = 5$ cm. , $EC = 3$ cm.

, then $BD = \dots\dots\dots$ cm.

(a) 9 (b) 8 (c) 6



(d) 12

- (3) If $6i^{32} + 4i^3 = X + yi$, then $X + y = \dots\dots\dots$

(a) 24 (b) 2 (c) -2 (d) -24

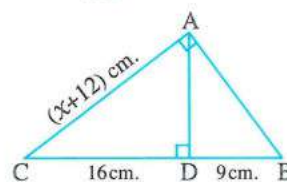
(4) In the opposite figure :

$m(\angle A) = 90^\circ$, $\overline{AD} \perp \overline{BC}$, $BD = 9$ cm.

, $CD = 16$ cm. , $AC = (X + 12)$ cm.

, then $X = \dots\dots\dots$

(a) 6 (b) 7 (c) 8 (d) 9



- (5) If L and M are two roots of the equation : $X^2 - 2X + 3 = 0$, then $M^2 - 2M + 7 = \dots\dots\dots$

(a) 10 (b) -4 (c) -3 (d) 4

- (6) Two similar rectangles , the dimensions of the first are 10 cm. , 6 cm. and the width of the second is 3 cm. , then the length of the second is

(a) 1.8 (b) 5 (c) 8 (d) 10

3 Choose the correct answer from those given :

- (1) The sign of the function $f(X) = 6 - 2X$ is non-negative at the interval

(a) $]-\infty, 3[$ (b) $]0, 3]$ (c) $]-\infty, 3]$ (d) $\mathbb{R}$

- (2) Two similar polygons , the ratio between the lengths of two corresponding sides is 3 : 4 , if the perimeter of the smaller is 15 cm. , then the perimeter of the bigger is

(a) 20 (b) 27 (c) 60 (d) $\frac{25}{4}$

- (3) The range of the function $f(\theta) = 4 \cos 2\theta$ where $\theta \in [0, 360^\circ]$ is

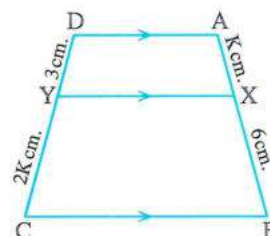
(a) $]-2, 2[$ (b) $[2, 2]$ (c) $[-4, 4]$ (d) $]-4, 4[$

(4) In the opposite figure :

If $\overline{AD} \parallel \overline{XY} \parallel \overline{BC}$

, then $K = \dots\dots\dots$ cm.

(a) 3 (b) 6
(c) 9 (d) 18



(5) If $\cos(90^\circ - \theta) = \frac{1}{2}$, where θ is the smallest acute angle, then $\theta = \dots\dots\dots^\circ$

- (a) 30 (b) 45 (c) 60 (d) 75

(6) The interior and exterior bisectors at a vertex of an angle of a triangle are

- (a) congruent. (b) parallel.
(c) bisect each other. (d) perpendicular.

4 Choose the correct answer from those given :

(1) The length of the arc of a circle its diameter length 12 cm. and opposite to a central angle of measure $\frac{\pi}{3}$ is cm.

- (a) $\frac{\pi}{2}$ (b) 2π (c) $\frac{2\pi}{5}$ (d) $\frac{3\pi}{2}$

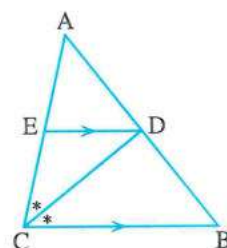
(2) In the opposite figure :

$\overrightarrow{CD}$ bisects $\angle C$, $\overrightarrow{ED} \parallel \overrightarrow{CB}$

, $BC = 6$ cm. , $AC = 9$ cm.

, then $\frac{ED}{CB} = \dots\dots\dots$

- (a) $\frac{4}{3}$ (b) $\frac{3}{2}$
(c) $\frac{3}{5}$ (d) $\frac{2}{5}$



(3) If the terminal side of an angle whose measure θ is in its standard position intersects the unit circle at the point $(-0.8, y)$ where θ is an obtuse angle, then $\tan(180^\circ - \theta) = \dots\dots\dots$

- (a) $\frac{4}{3}$ (b) $-\frac{4}{3}$ (c) $\frac{3}{4}$ (d) $-\frac{3}{4}$

(4) If $\tan 3\alpha = \cot 6\alpha$, then $\cos 6\alpha = \dots\dots\dots$ (where α is the smallest positive angle)

- (a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{\sqrt{2}}{2}$

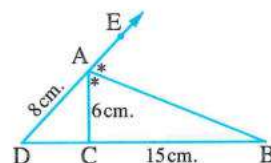
(5) In the opposite figure :

$\overrightarrow{AB}$ bisects $\angle EAC$, $AC = 6$ cm.

, $AD = 8$ cm. , $BC = 15$ cm.

, then $CD = \dots\dots\dots$ cm.

- (a) 5 (b) 8 (c) 10 (d) 12



(6) The angle whose measure $\frac{11\pi}{3}$ lies at quadrant.

- (a) first (b) second (c) third (d) fourth

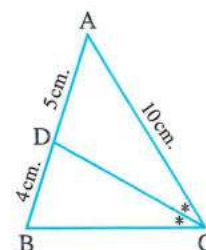
(7) In the opposite figure :

$\overrightarrow{CD}$ bisects $\angle C$, $AC = 10$ cm.

, $AD = 5$ cm. , $BD = 4$ cm.

, $CD = \dots\dots\dots$ cm.

- (a) 8 (b) $\sqrt{15}$
(c) 60 (d) $2\sqrt{15}$



- 5 If L and M are two roots of the equation : $X^2 + 5X = 4$ find the equation whose two roots L^2M and LM^2

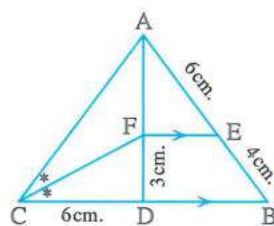
6 In the opposite figure :

$\overline{EF} \parallel \overline{BC}$, $\overline{CF}$ bisects $\angle ACD$

, $AE = 6$ cm. , $EB = 4$ cm.

, $FD = 3$ cm. , $CD = 6$ cm.

Find : the length of $\overline{AF}$, $\overline{AC}$



4

Giza Governorate



6 October Educational Administration
Math Inspection

1 Choose the correct answer from those given :

- (1) The equation whose roots are : $2i$, $-2i$ is
- (a) $X^2 + 2 = 0$ (b) $X^2 + 4 = 0$ (c) $X^2 = 4$ (d) $X^2 = 2$
- (2) If the two roots of the equation : $X^2 - kX + 25 = 0$ are real equal , then $k =$
- (a) -10 (b) 10 (c) 5 (d) ± 10
- (3) The function $f(X) = 2X - 6$ is positive in the interval
- (a) $]-\infty, 3[$ (b) $]-\infty, 2[$ (c) $]2, \infty[$ (d) $]3, \infty[$
- (4) The simplest form of i^{42} is
- (a) $-i$ (b) -1 (c) i (d) 1
- (5) If one of the two roots of the equation : $X^2 - (k+3)X + 4 = 0$ is the additive inverse of the other root , then $k =$
- (a) -4 (b) 3 (c) 4 (d) -3
- (6) If L is a root of the equation : $3X^2 + 4X - 7 = 0$, then the vale of $3L^2 + 4L =$
- (a) zero (b) -7 (c) 14 (d) 7

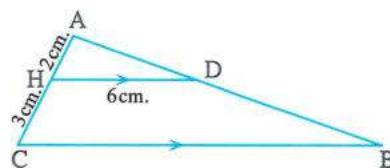
2 Choose the correct answer from those given :

- (1) The ratio between the lengths of two corresponding sides of two similar polygon is $5 : 3$ and the difference between their areas is 32 cm^2 , then the area of the smaller polygon is cm^2
- (a) 18 (b) 50 (c) 32 (d) 16
- (2) The solution set of the inequality : $X(X-1) > 0$ in $\mathbb{R}$
- (a) $\{0, 1\}$ (b) $[0, 1]$ (c) $\mathbb{R} -]0, 1[$ (d) $\mathbb{R} - [0, 1]$

(3) In the opposite figure :

$\overline{DH} \parallel \overline{BC}$, $AH = 2$ cm.
 , $HC = 3$ cm. , $DH = 6$ cm.
 , then $BC = \dots\dots\dots$ cm.

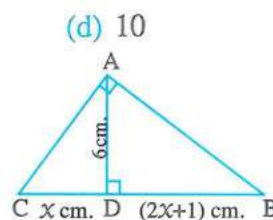
- (a) 9 (b) 15 (c) 12 (d) 10



(4) In the opposite figure :

$x = \dots\dots\dots$ cm.

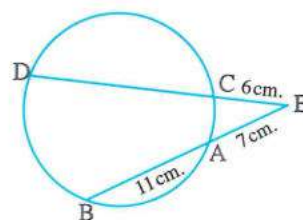
- (a) 4.5 (b) 4 (c) 6 (d) 36



(5) In the opposite figure :

$CD = \dots\dots\dots$ cm.

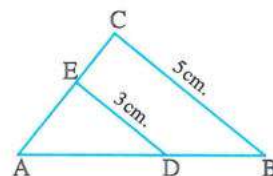
- (a) 12 (b) 13 (c) 14 (d) 15



(6) In the opposite figure :

$\triangle ADE \sim \triangle ABC$ and the area of $\triangle ADE = 90$ cm²
 , then area of $BCED = \dots\dots\dots$ cm²

- (a) 20 (b) 50 (c) 160 (d) 250

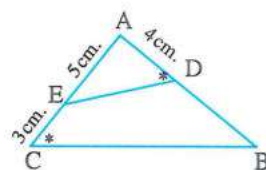


3 Choose the correct answer from those given :

(1) In the opposite figure :

If $m(\angle C) = m(\angle ADE)$
 , then $BD = \dots\dots\dots$ cm.

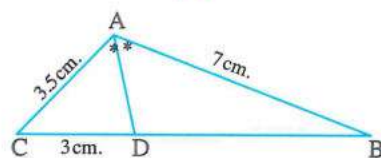
- (a) 4 (b) 5 (c) 6 (d) 7



(2) In the opposite figure :

$BD = \dots\dots\dots$ cm.

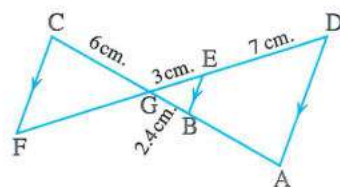
- (a) 4.5 (b) 5 (c) 4.9 (d) 6



(3) In the opposite figure :

$\overline{AD} \parallel \overline{BE} \parallel \overline{CF}$, $\overline{AC} \cap \overline{DF} = \{G\}$, $EG = 3$ cm.
 , $CG = 6$ cm. , $BG = 2.4$ cm. and $ED = 7$ cm.
 , then $GF = \dots\dots\dots$ cm.

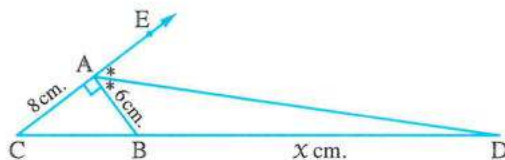
- (a) 7.5 (b) 8.5 (c) 9 (d) 10



(4) In the opposite figure :

$AC = \dots\dots\dots$ cm.

- (a) 7.5 (b) 10
(c) 30 (d) 40

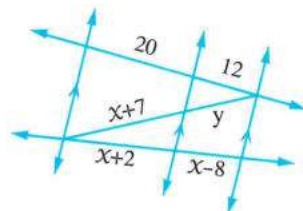


(5) In the opposite figure :

If the given lengths in cm.

, then $x + y = \dots\dots\dots$ cm.

- (a) 23 (b) 18
(c) 41 (d) 51

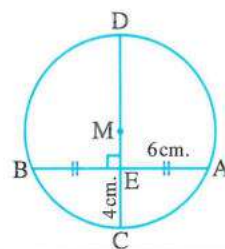


(6) In the opposite figure :

$\overline{CD}$ is a diameter, $A = 6$ cm., $CE = 4$ cm.

, then the radius length of the circle $M = \dots\dots\dots$ cm.

- (a) 9 (b) 4.5
(c) 6 (d) 6.5



4 Choose the correct answer from those given :

- (1)** The terminal side of an angle θ in standard position intersects the unit circle at point $B\left(x, \frac{3}{5}\right)$ where $x < 0$, then $\sin(90^\circ + \theta) = \dots\dots\dots$

- (a) -0.8 (b) -0.6 (c) 0.8 (d) 0.6

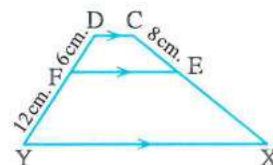
(2) In the opposite figure :

$\overline{CD} \parallel \overline{FE} \parallel \overline{XY}$, $CE = 8$ cm.

, $DF = 6$ cm., $FY = 12$ cm.

, then the length of $\overline{XE}$ is $\dots\dots\dots$ cm.

- (a) 42 (b) 16 (c) 24 (d) 21



- (3)** If $\sin(2\theta) = \cos(4\theta)$, where θ is a positive acute angle, then $\tan(90^\circ - 3\theta) = \dots\dots\dots$

- (a) -1 (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\sqrt{3}$

- (4)** If $25 \cos \theta = 7$ where $\theta \in \left[\frac{3\pi}{2}, 2\pi\right]$, then $\tan \theta = \dots\dots\dots$

- (a) $\frac{24}{7}$ (b) $\frac{7}{24}$ (c) $-\frac{24}{7}$ (d) $-\frac{7}{24}$

- (5)** The radian measure of a central angle which subtended an arc of length 3 cm. of a circle whose diameter length equal 4 cm. is $\dots\dots\dots$

- (a) $\left(\frac{3}{4}\right)^{\text{rad}}$ (b) $\left(\frac{3}{2}\right)^{\text{rad}}$ (c) 6^{rad} (d) $\left(\frac{2}{3}\right)^{\text{rad}}$

- (6)** $\sin(180^\circ + A) \sec(270^\circ + A) = \dots\dots\dots$

- (a) $\tan A$ (b) $\cot A$ (c) $\cot 45^\circ$ (d) $\tan 135^\circ$

- (7)** The maximum value of the function $f : f(x) = 2 \sin 4x$ is $\dots\dots\dots$

- (a) 2 (b) 4 (c) 6 (d) 8

5 Find in $\mathbb{R}$ the solution set of the inequality : $x^2 - 3x - 4 \leq 0$

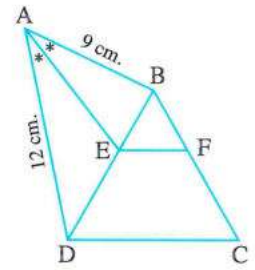
6 In the opposite figure :

$AB = 9$ cm. , $AD = 12$ cm.

, $\overrightarrow{AE}$ bisects $\angle BAD$

and $BF : FC = 3 : 4$

Prove that : $\overrightarrow{FE} \parallel \overrightarrow{CD}$



5

Giza Governorate



Mathematics Inspection

1 Choose the correct answer from those given :

(1) The angle whose measure is 120° in the standard position is equivalent to the angle of measure

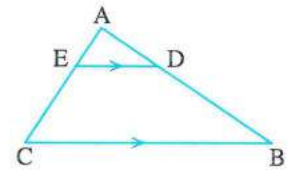
- (a) 420° (b) 240° (c) -300° (d) -240°

(2) In the opposite figure :

$\overrightarrow{DE} \parallel \overrightarrow{BC}$, $2AD = DB$, $DE = 4$ cm.

, then $BC = \dots\dots\dots$ cm.

- (a) 6 (b) 8
(c) 12 (d) 16



(3) If $a = 5 + \sqrt{3}i$, $b = 5 - \sqrt{3}i$, then $ab = \dots\dots\dots$

- (a) 28 (b) 25 (c) 21 (d) 7

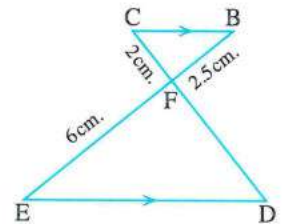
(4) In the opposite figure :

If $\overrightarrow{ED} \parallel \overrightarrow{CB}$, $CF = 2$ cm.

, $BF = 2.5$ cm. , $FE = 6$ cm.

, then $FD = \dots\dots\dots$ cm.

- (a) 3.6 (b) 4
(c) 4.2 (d) 4.8



(5) If polygon m_1 is minimize of polygon m_2 , with scale factor k , then

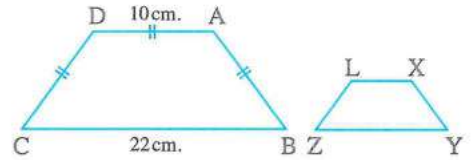
- (a) $k > 1$ (b) $k < 0$ (c) $k = 1$ (d) $0 < k < 1$

(6) The radian measure of the central angle opposite to an arc of length 6 cm. in a circle of diameter length 12 cm. is

- (a) $\left(\frac{1}{2}\right)^{\text{rad}}$ (b) $(1)^{\text{rad}}$ (c) $(3)^{\text{rad}}$ (d) $(\pi)^{\text{rad}}$

(7) In the opposite figure :

If $ABCD \sim XYZL$, the perimeter of the figure $XYZL = 26$ cm. , $AD = 10$ cm. , $BC = 22$ cm. , $AB = AD = DC$, then $\frac{AD}{XL} = \dots\dots\dots$ cm.



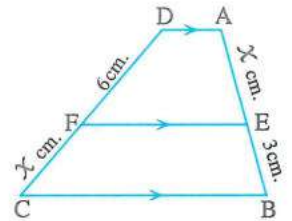
- (a) 1 : 2 (b) 2 : 3 (c) 3 : 4 (d) 2 : 1

2 Choose the correct answer from those given :

- (1) If $\cos (270^\circ - \theta) = \frac{-1}{2}$ where θ is the measure of the smallest positive angle , then $\theta = \dots\dots\dots^\circ$
 (a) 30 (b) 150 (c) 210 (d) 330
- (2) The solution set of the equation : $x^2 + 16 = 0$ in the set of complex number is
 (a) $\{4i\}$ (b) $\{-4i\}$ (c) $\{4i, -4i\}$ (d) $\{4\}$
- (3) If $\triangle ABC \sim \triangle XYZ$ and $2AB = 3XY$, then the perimeter of $\triangle ABC$: the perimeter of $\triangle XYZ = \dots\dots\dots$
 (a) 4 : 9 (b) 9 : 4 (c) 2 : 3 (d) 3 : 2
- (4) If the equation : $x^2 - 6x + m = 0$ has two equal real roots , then $m = \dots\dots\dots$
 (a) 7 (b) 8 (c) 9 (d) 10

(5) In the opposite figure :

$x = \dots\dots\dots$ cm.

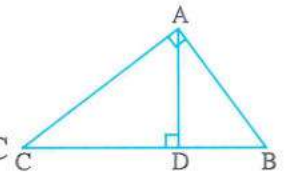


- (a) 6 (b) $3\sqrt{2}$
 (c) $3\sqrt{3}$ (d) 18
- (6) Range of the function f where $f(\theta) = \frac{1}{2} \sin 3\theta$ is
 (a) $[-\frac{1}{2}, \frac{1}{2}]$ (b) $[-2, 2]$ (c) $[-\frac{3}{2}, \frac{3}{2}]$ (d) $[-3, 3]$

3 Choose the correct answer from those given :

(1) In the opposite figure :

$\triangle ABC$ is right angled triangle at A , $\overline{AD} \perp \overline{BC}$, then the false statement of the following is



- (a) $\triangle ABC \sim \triangle DBA$ (b) $\triangle ABC \sim \triangle DAC$
 (c) $\triangle ACD \sim \triangle BAD$ (d) $AD = DB \times DC$
- (2) If 2 , 3 are the two roots of the equation : $x^2 + ax + b = 0$, then $(a, b) = \dots\dots\dots$
 (a) (2 , 3) (b) (5 , 6) (c) (-5 , -6) (d) (-5 , 6)
- (3) The exterior bisector of the vertex of isosceles triangle is to the base.
 (a) perpendicular (b) bisects (c) parallel (d) equal

(4) If $\sin 3\theta = \cos 6\theta$, $0^\circ < \theta < 45^\circ$, then $\theta = \dots\dots\dots$

- (a) 10° (b) 15° (c) 20° (d) 25°

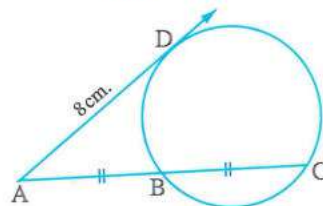
(5) In the opposite figure :

$\overrightarrow{AD}$ is a tangent of the circle

, $AD = 8$ cm. , $AB = BC$

, then $AC = \dots\dots\dots$ cm.

- (a) 32 (b) $4\sqrt{2}$ (c) $8\sqrt{2}$ (d) 64



(6) The function which has a positive sign in $\mathbb{R} - \{2\}$ is $f(x) = \dots\dots\dots$

- (a) $(x-2)(x+2)$ (b) $x^2 - 4x + 4$ (c) $x - 2$ (d) $(x+2)^2$

4 Choose the correct answer from those given :

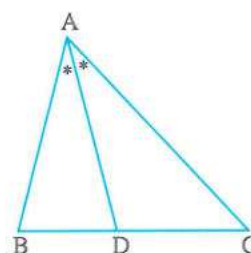
(1) In the opposite figure :

If $AB \times AC = 10$ cm.

, $BD \times DC = 6$ cm.

, then $AD = \dots\dots\dots$ cm.

- (a) 2 (b) 4
(c) 8 (d) 10



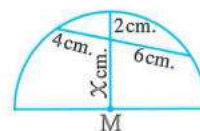
(2) $\frac{\sin 56^\circ}{\cos 34^\circ} + \tan 35^\circ \cot 35^\circ = \dots\dots\dots$ cm.

- (a) -2 (b) zero (c) 1 (d) 2

(3) In the opposite figure :

A semicircle of centre M , then $x = \dots\dots\dots$ cm.

- (a) 5 (b) 7
(c) 8 (d) 12



(4) Two similar triangles of areas 13 cm^2 and 52 cm^2 , then the ratio between the lengths of two corresponding sides is $\dots\dots\dots$

- (a) 1 : 4 (b) 1 : 2 (c) 1 : 5 (d) 2 : 1

(5) If the function $f : f(x) = a$ has a positive sign , then $\dots\dots\dots$

- (a) $a > \text{zero}$ (b) $a < \text{zero}$ (c) $a = \text{zero}$ (d) $a \leq \text{zero}$

(6) The solution set of the inequality : $x^2 \geq 4x + 21$ in $\mathbb{R}$ is $\dots\dots\dots$

- (a) $[-3, 7]$ (b) $\mathbb{R} -]-3, 7[$ (c) $\mathbb{R} - \{-3, 7\}$ (d) $\{7\}$

5 Determine the sign of the function : $f(x) = x^2 - x - 6$, then find the solution set of the inequality : $f(x) > \text{zero}$

6 In the opposite figure :

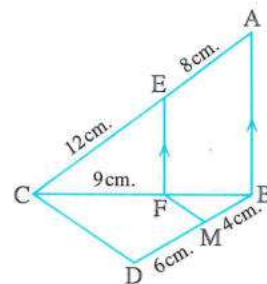
$\overline{AB} \parallel \overline{EF}$, $AE = 8$ cm.

, $CE = 12$ cm. , $CF = 9$ cm.

, $BM = 4$ cm. and $DM = 6$ cm.

(1) Find the length of : $\overline{BF}$

(2) Prove that : $\overline{FM} \parallel \overline{CD}$



6

Alexandria Governorate



**Al Agamy Educational Administration
Math Inspection**

1 Choose the correct answer from those given :

(1) If $(1 - i^6)(1 - i^9) = X + yi$, then $X + y = \dots\dots\dots$

- (a) zero (b) 4 (c) -4 (d) 2

(2) If $3x^2 + 4x + m - 3 = 0$ and the discriminant = 4 , then $m = \dots\dots\dots$

- (a) -4 (b) 2 (c) 3 (d) 4

(3) If L, M are roots of quadratic equation : $x^2 + x + k - 4 = 0$ and $2L + 3M = -5$, then $k = \dots\dots\dots$

- (a) -2 (b) 2 (c) 3 (d) 4

(4) The quadratic equation whose roots are : $3 + \sqrt{2}, 3 - \sqrt{2}$ is $\dots\dots\dots$

- (a) $x^2 - 6 = 0$ (b) $x^2 + 6x + 5 = 0$
(c) $x^2 - 6x + 7 = 0$ (d) $x^2 + 6x + 7 = 0$

(5) If $L, 2 - L$ are roots of quadratic equation : $x^2 + kx + 6 = 0$, then $k = \dots\dots\dots$

- (a) 1 (b) 2 (c) -2 (d) 5

(6) $f(x) = 2 - x$ is positive when $\dots\dots\dots$

- (a) $x > 2$ (b) $x < -2$ (c) $x > -2$ (d) $x < 2$

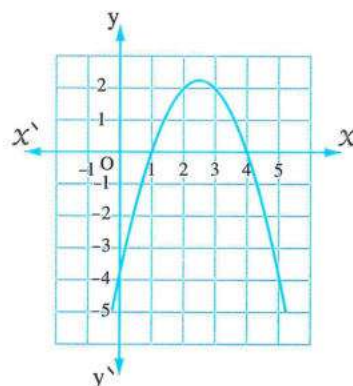
2 Choose the correct answer from those given :

(1) In the opposite figure :

The solution set of the quadratic inequality

$f(x) \geq 0$ in $\mathbb{R}$ is $\dots\dots\dots$

- (a) $\{1, 4\}$
(b) $[1, 4]$
(c) $]1, 4[$
(d) $\mathbb{R} -]1, 4[$



- (2) The angle of measure $\left(\pi + \frac{\pi}{6}\right)$ lies in quadrant.
 (a) first (b) second (c) third (d) fourth
- (3) The length of an arc in a circle of radius 12 cm. and opposite to central angle of measure $\frac{1}{3}\pi =$ cm.
 (a) π (b) 3π (c) 2π (d) 4π
- (4) If the terminal side of directed angle θ in its standard position cut the unit circle at the point $\left(\frac{3}{5}, \frac{4}{5}\right)$, then $\tan(270^\circ - \theta) =$
 (a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $\frac{3}{5}$ (d) $\frac{4}{5}$
- (5) The angle of measure $210^\circ + 180^\circ(2n - 1)$, $n \in \mathbb{Z}$ has a radian measure = + $2\pi n$
 (a) π (b) $\frac{1}{2}\pi$ (c) $\frac{1}{3}\pi$ (d) $\frac{1}{6}\pi$
- (6) If ΔABC is right at $(\angle C)$, then $\frac{\sin A - \sin B}{\cos A - \cos B} =$
 (a) -1 (b) zero (c) 1 (d) 2

3 Choose the correct answer from those given :

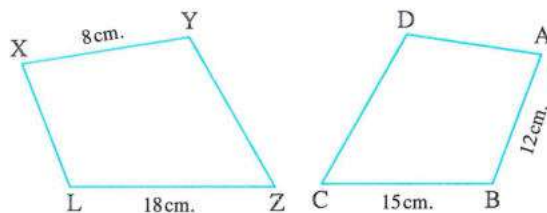
- (1) The range of the function $f(\theta) = 2 \cos 4\theta$ is
 (a) $[-4, 4]$ (b) $[-1, 1]$ (c) $[-2, 2]$ (d) $[-8, 8]$

(2) In the opposite figure :

$ABCD \sim XYZL$

, then $YZ =$ cm.

- (a) 10 (b) 8
 (c) 12 (d) 6



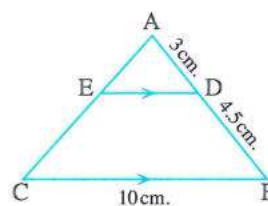
(3) In the opposite figure :

ΔABC , $\overline{DE} \parallel \overline{BC}$, $AD = 3$ cm.

, $DB = 4.5$ cm. , $BC = 10$ cm.

, then $DE =$ cm.

- (a) 2 (b) 4
 (c) 5 (d) 10



- (4) The triangle in which the measure of two angles are 50° , 60° is similar to a triangle in which the measure of two angles are 60° cm.

- (a) 70° (b) 110° (c) 80° (d) 30°

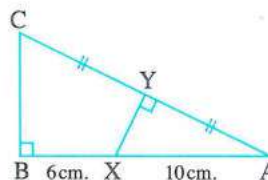
(5) In the opposite figure :

If $m(\angle B) = 90^\circ$, $\overline{XY} \perp \overline{AC}$

, $BX = 6$ cm. , $AX = 10$ cm. , $AY = YC$

, then $YC =$ cm.

- (a) $2\sqrt{5}$ (b) $4\sqrt{5}$ (c) 16 (d) 80

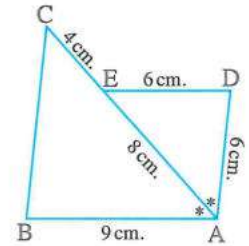


(6) In the opposite figure :

If $\overrightarrow{AE}$ bisect $(\angle DAB)$ and $(\triangle DAE) \sim (\triangle BAC)$

, then $BC = \dots\dots\dots$ cm.

- (a) 4 (b) 8
(c) 12 (d) 9



4 Choose the correct answer from those given :

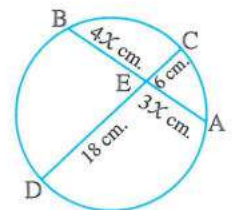
(1) If the ratio between perimeter of two similar triangles is $1 : 9$, then the ratio between their areas = $\dots\dots\dots$

- (a) $1 : 9$ (b) $1 : 3$ (c) $1 : 81$ (d) $9 : 1$

(2) In the opposite figure :

$x = \dots\dots\dots$

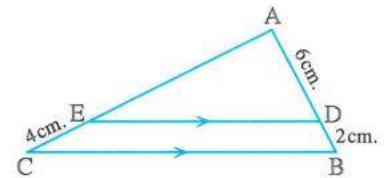
- (a) 2 (b) 3
(c) 4 (d) 5



(3) In the opposite figure :

$AE = \dots\dots\dots$ cm.

- (a) 1.5 (b) 3
(c) 6 (d) 12



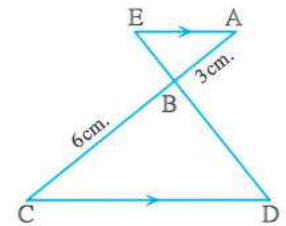
(4) In the opposite figure :

$\overline{AE} \parallel \overline{DC}$, $\overline{AC} \cap \overline{ED} = \{B\}$

, $AB = 3$ cm. , $BC = 6$ cm. , $ED = 12$ cm.

, then $EB = \dots\dots\dots$ cm.

- (a) 2 (b) 4
(c) 6 (d) 3



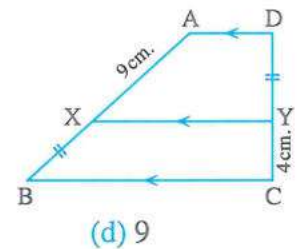
(5) In the opposite figure :

$\overline{AD} \parallel \overline{XY} \parallel \overline{BC}$, $AX = 9$ cm.

, $YC = 4$ cm. , $BX = DY$

, then $DY = \dots\dots\dots$ cm.

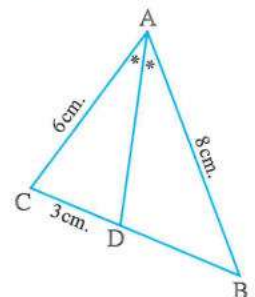
- (a) 2 (b) 4 (c) 6



(6) In the opposite figure :

$AD = \dots\dots\dots$ cm.

- (a) 3
(b) 5
(c) 4
(d) 6



(7) In the opposite figure :

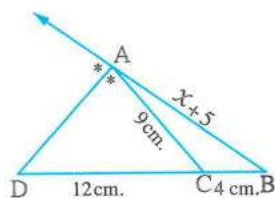
$AC = \dots\dots\dots$ cm.

(a) 3.5

(b) 7

(c) 14

(d) $2\sqrt{21}$



5 If L , L^2 are roots of quadratic equation : $x^2 + kx + 27 = 0$, then find k

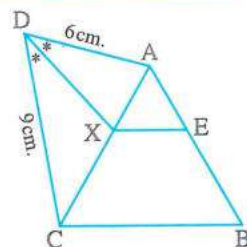
6 In the opposite figure :

ABCD is a quadrilateral , $\overrightarrow{DX}$ bisect $(\angle D)$

, $AE : EB = 2 : 3$, $AD = 6$ cm.

, $DC = 9$ cm.

Prove that : $\overline{XE} \parallel \overline{CB}$



7 El-Kalyoubia Governorate



Mathematics Supervision

1 Choose the correct answer from those given :

(1) If $(x + 1) + (y - 2)i = 4 + 3i$, then $x + y = \dots\dots\dots$

(a) 8

(b) 5

(c) 7

(d) 3

(2) If the two roots of the equation : $x^2 - 8x + k = 0$ are equal real numbers , then the value of $k = \dots\dots\dots$

(a) 8

(b) 16

(c) - 8

(d) - 16

(3) Solution set of the equation : $x^2 + 25 = 0$ in complex numbers is $\dots\dots\dots$

(a) $\{5\}$

(b) $\{-5\}$

(c) $\{-5i, 5i\}$

(d) $\emptyset$

(4) If the two roots of equation $mx^2 - 12x + 9 = 0$ are complex not real numbers , then $\dots\dots\dots$

(a) $m > 4$

(b) $m = 4$

(c) $m < 4$

(d) $m = 1$

(5) The sign of the function : $f(x) = 6 - 3x$ has a positive sign if $\dots\dots\dots$

(a) $x \geq 2$

(b) $x > 2$

(c) $x < 2$

(d) $x = 2$

(6) The quadratic equation whose two roots are 2 and 5 is $\dots\dots\dots$

(a) $x^2 + 7x - 10 = 0$

(b) $x^2 - 7x + 10 = 0$

(c) $x^2 + 7x + 10 = 0$

(d) $x^2 - 7x - 10 = 0$

2 Choose the correct answer from those given :

(1) The solution set of the inequality : $(x - 2)(x + 4) \leq 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\mathbb{R} - [-4, 2]$

(b) $\mathbb{R} -]-4, 2[$

(c) $] -4, 2[$

(d) $[-4, 2]$

(2) $\cos(90^\circ - \theta) \times \csc \theta = \dots\dots\dots^\circ$

(a) zero

(b) 1

(c) - 1

(d) $\frac{-4}{5}$

(3) $\cot 90^\circ = \dots\dots\dots$

- (a) zero (b) 1 (c) -1 (d) undefined.

(4) All the following are measure of angles lying in the second quadrant except $\dots\dots\dots^\circ$

- (a) -240 (b) 100 (c) -120 (d) 860

(5) If $\sin(2\theta) = \cos(4\theta)$, where θ is a positive acute angle, then $\tan(90^\circ - 3\theta) = \dots\dots\dots$

- (a) -1 (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\sqrt{3}$

(6) The range of the function $f : f(\theta) = 3 \cos 2\theta$ equal $\dots\dots\dots$

- (a) $[-2, 2]$ (b) $[-3, 3]$ (c) $]-3, 3[$ (d) $]-2, 2[$

3 Choose the correct answer from those given :

(1) The circle of diameter length 12 cm., the length of the arc subtended by a central angle of measure 60° equals $\dots\dots\dots$ cm.

- (a) 5π (b) 4π (c) 3π (d) 2π

(2) The ratio between the lengths of two corresponding sides of two similar polygons is $5 : 3$ and the difference between their area is 32 cm^2 , then the area of the smaller polygon is $\dots\dots\dots \text{ cm}^2$

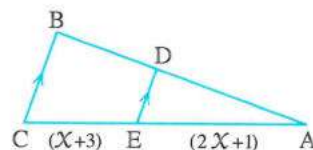
- (a) 18 (b) 50 (c) 32 (d) 21

(3) In the opposite figure :

If $AD : AB = 3 : 5$

, then $x = \dots\dots\dots$

- (a) 5 (b) 3
(c) 4 (d) 7



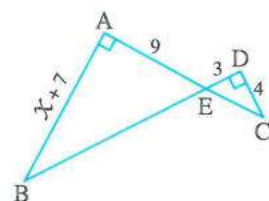
(4) In the opposite figure :

$\overline{BA} \perp \overline{AC}$ and $\overline{CD} \perp \overline{BD}$, $AB = x + 7$

, $AE = 9 \text{ cm.}$, $ED = 3 \text{ cm.}$, $DC = 4 \text{ cm.}$

, then $x = \dots\dots\dots \text{ cm.}$

- (a) 9 (b) 3 (c) 4 (d) 5



(5) If $\triangle ABC \sim \triangle DEF$, $BC = 3 EF$, then the scale factor of similarity of two triangles = $\dots\dots\dots$

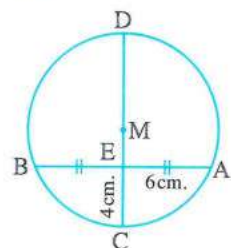
- (a) $\frac{2}{3}$ (b) $\frac{1}{2}$ (c) 1 (d) 3

(6) In the opposite figure :

$\overline{CD}$ is a diameter, $AE = 6 \text{ cm.}$, $CE = 4 \text{ cm.}$

, then the radius length of the circle $M = \dots\dots\dots \text{ cm.}$

- (a) 9 (b) 4.5
(c) 6 (d) 6.5

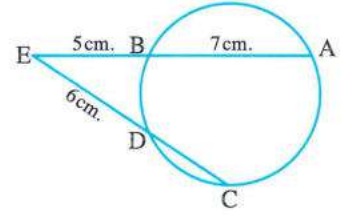


4 Choose the correct answer from those given :

(1) In the opposite figure :

CD = cm.

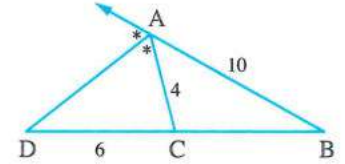
- (a) 8 (b) 12
(c) 6 (d) 4



(2) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$ externally
, then BD = cm.

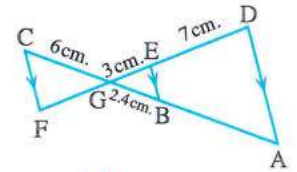
- (a) 10 (b) 9
(c) 15 (d) 4



(3) In the opposite figure :

$\overline{AD} \parallel \overline{BE} \parallel \overline{CF}$, $\overline{AC} \cap \overline{DF} = \{G\}$, EG = 3 cm.
, CG = 6 cm. , BG = 2.4 cm. and ED = 7 cm.
, then GF = cm.

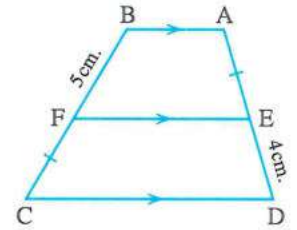
- (a) 7.5 (b) 8.5 (c) 9



(4) In the opposite figure :

$\overline{AB} \parallel \overline{EF} \parallel \overline{DC}$, AE = FC
, BF = 5 cm. and ED = 4 cm.
, then AE = cm.

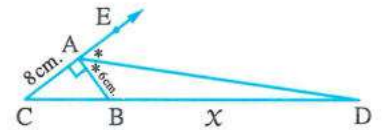
- (a) 2 (b) $2\sqrt{5}$
(c) $5\sqrt{2}$ (d) 20



(5) In the opposite figure :

$\angle X =$ cm.

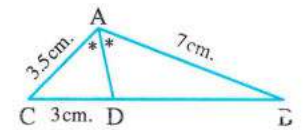
- (a) 7.5 (b) 10
(c) 30 (d) 40



(6) In the opposite figure :

BD = cm.

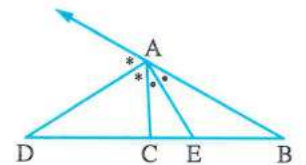
- (a) 4.5 (b) 5
(c) 4.9 (d) 6



(7) In the opposite figure :

$\overrightarrow{AD}$ bisects the exterior angle at A
, $\overrightarrow{AE}$ bisects the interior angle at A
, then $m(\angle EAD) =$ $^{\circ}$

- (a) 30 (b) 45
(c) 60 (d) 90



- 5** If L, M are the two roots of the equation : $x^2 - 5x + 9 = 0$
 , find the equation whose roots : L^2, M^2

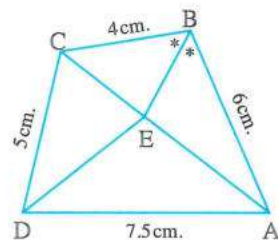
6 In the opposite figure :

$\overrightarrow{BE}$ bisects $\angle B$ and intersects $\overline{AC}$ at E

, $AB = 6$ cm. , $CD = 5$ cm.

, $DA = 7.5$ cm. and $BC = 4$ cm.

Prove that : $\overrightarrow{DE}$ bisects $\angle ADC$



8

El-Sharkia Governorate



**Abu Kabir Educational Administration
Math Inspection**

1 Choose the correct answer from those given :

- (1) If $a < b < 0 < c$ where a, b, c are real numbers , $\sqrt{b(c-a)} + \sqrt{ab} = 2 + 3i$
 , then $bc = \dots\dots\dots$
 (a) -5 (b) -3 (c) -2 (d) 3
- (2) The exterior bisector at the vertex of an isosceles triangle to the base.
 (a) equal (b) parallel
 (c) bisects (d) perpendicular
- (3) The sum of roots of the equation : $(x - a)(x - b) = c$ is
 (a) $a + b$ (b) $-(a + b)$ (c) $ab - c$ (d) $a + b - c$
- (4) If the roots of the quadratic equation : $x^2 + bx + c = 0$ are two consecutive odd numbers , then $b^2 - 4c = \dots\dots\dots$
 (a) -4 (b) -3 (c) 3 (d) 4
- (5) The sign of the function $f : f(x) = -2x + 8$ is non positive at
 (a) $x > 4$ (b) $x \geq 4$ (c) $x \leq 4$ (d) $x < 4$
- (6) If one of the two roots of the equation : $ax^2 - 3x + 2 = 0$ is the multiplicative inverse of the other root , then $a = \dots\dots\dots$
 (a) -2 (b) 0.5 (c) 3 (d) 2

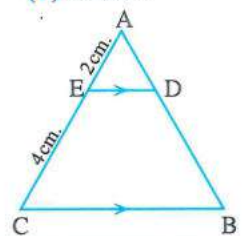
2 Choose the correct answer from those given :

- (1) If the two roots of the equation : $ax^2 + bx + c = 0$ are $(m - n - 1)$, $(n - m + 2)$
 , then
 (a) $\frac{c}{a} = -1$ (b) $\frac{b}{a} = -1$ (c) $\frac{b}{a} = 1$ (d) $\frac{c}{a} = 1$
- (2) If the function $f : f(x) = ax^2 + bx + c$ and roots of equation $f(x) = 0$ are equal roots
 , then $(b^2 - 4ac) \times f(3) = \dots\dots\dots$
 (a) 2 (b) 0 (c) 3 (d) -3

- (3) If the terminal side of an angle of measure 30° in standard position rotates three and half evolution clockwise, then the terminal side lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- (4) In $\triangle ABC$: $\overrightarrow{AD}$ bisects $\angle A$ internally and $AB > AC$, then DC DB
 (a) $\leq$ (b) $\geq$ (c) $>$ (d) $<$
- (5) The ratio between the lengths of two corresponding sides of two similar polygons is $2 : 3$ and the area of the greater is 27 cm^2 , the area of the smaller polygon =
 (a) 12 cm^2 (b) 14 cm^2 (c) 15 cm^2 (d) 20 cm^2
- (6) The ratio between the diameters of two circles is $3 : 5$ if the area of the smaller circle is 27 cm^2 , then the area of the greater one is
 (a) 75 cm^2 (b) 45 cm^2 (c) 20 cm^2 (d) 50 cm^2

3 Choose the correct answer from those given :

- (1) The length of the arc subtends central angle whose measure is $\frac{\pi}{3}$ and the radius length of its circle = 6 cm. equals cm.
 (a) 2π (b) 3π (c) $\frac{5\pi}{2}$ (d) $\frac{3\pi}{2}$
- (2) If $\frac{1}{\cot 2\alpha} = \frac{1}{\tan \alpha}$ where $\alpha \in]0, \frac{\pi}{2}[$, then $\alpha =$
 (a) 30 (b) 40 (c) 60 (d) 35
- (3) If $2 \cos\left(\frac{\pi}{2} - \theta\right) + \sqrt{3} = 0$, where $\theta \in]0, 2\pi[$, then the solution set is
 (a) $\{30^\circ\}$ (b) $\{240^\circ, 300^\circ\}$ (c) $\{120^\circ, 135^\circ\}$ (d) $\{360^\circ\}$
- (4) If $\sin \theta = \frac{-1}{2}$, $\tan \theta > 0$, then $\theta =$
 (a) 30 (b) 150 (c) 330 (d) 210
- (5) If $\sin(90^\circ + \beta) > 0$, $\sec(270^\circ + \beta) < 0$, then β lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- (6) In the opposite figure :
 $DE : BC =$
 (a) $2 : 3$ (b) $1 : 3$
 (c) $2 : 1$ (d) $1 : 4$

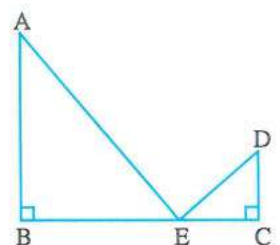


4 Choose the correct answer from those given :

(1) In the opposite figure :

The necessary condition needed to make the two triangles ABE, ECD similar is

- (a) $AE = ED$ (b) $BE = 2 EC$
 (c) $\overline{AE} \perp \overline{ED}$ (d) $AB + DC = BC$



(2) In the opposite figure :

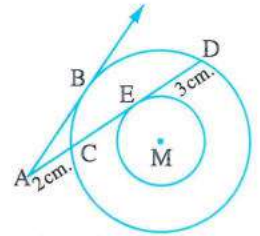
$AB = \dots\dots\dots$ cm.

(a) 4

(b) 5

(c) 6

(d) 8



(3) In the opposite figure :

If $3 BE = 4 CE$

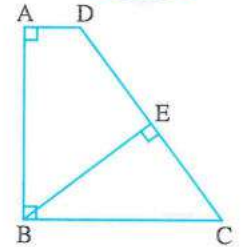
, then $\tan (\angle ADC) = \dots\dots\dots$

(a) $\frac{-4}{3}$

(b) $\frac{-3}{5}$

(c) $\frac{-5}{3}$

(d) $\frac{-3}{4}$



(4) In the opposite figure :

In $\triangle ABC$, $AC = 15$ cm.

, $AB = 12$ cm. , $\overline{AD}$ bisects $\angle A$

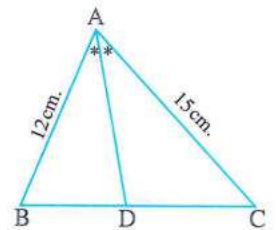
, then the area of $\triangle ACD$: the area of $\triangle ABD = \dots\dots\dots$

(a) $\frac{4}{5}$

(b) $\frac{15}{25}$

(c) $\frac{25}{16}$

(d) $\frac{5}{4}$



(5) In the opposite figure :

$\overline{AB}$ is a tangent to the circle

, $AC = 4$ cm. , $CD = 5$ cm.

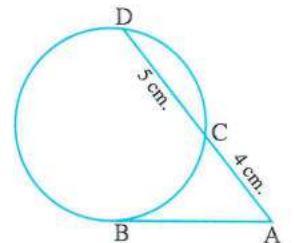
, then $AB = \dots\dots\dots$ cm.

(a) 6

(b) 9

(c) 4

(d) 5



(6) In the opposite figure :

M is the point of intersection of medians in $\triangle ABC$

, $\overline{DE} \parallel \overline{BC}$

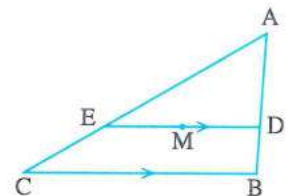
, then $\frac{AD}{DB} = \dots\dots\dots$

(a) 2

(b) 1 : 3

(c) 2 : 3

(d) 1 : 2



(7) In the opposite figure :

$\overline{AB} \parallel \overline{DE}$, $AC = 2$ cm.

, $CE = 3$ cm. , $BC = 4$ cm.

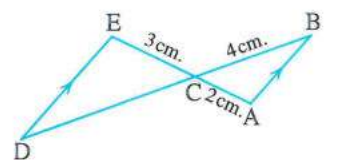
, then $CD = \dots\dots\dots$ cm.

(a) 6

(b) 9

(c) 4

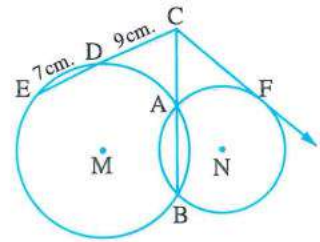
(d) 2



5 In the opposite figure :

M and N are two intersecting circles at A and B , $C \in \overrightarrow{BA}$, $C \notin \overline{BA}$, $\overrightarrow{CD}$ is drawn to intersect circle M at D and E where $CD = 9$ cm. , $DE = 7$ cm. , $\overrightarrow{CF}$ is drawn to touches the circle N at F

If $AB = 10$ cm. , find the length of each of $\overline{AC}$, $\overline{CF}$



- 6** Determine the sign of the function $f : f(x) = x^2 - x - 12$ and hence determine in $\mathbb{R}$ the solution set of the inequality : $x^2 - 12 > x$, represent the solution on the number line.

9

El-Monofia Governorate



**Shebin El-Khoum Directorate
Math Supervision**

1 Choose the correct answer from those given :

- (1) If one of the two roots of the equation $x^2 + (k - 3)x - 2 = 0$ is the additive inverse of the other root , then $k = \dots\dots\dots$
- (a) 3 (b) -2 (c) -3 (d) 2
- (2) The solution set of the inequality $x^2 + 9 < 0$ in $\mathbb{R}$ is $\dots\dots\dots$
- (a) $[-3, 3]$ (b) $\emptyset$ (c) $]-3, 3[$ (d) $\mathbb{R}$
- (3) If the two roots of the equations $3x^2 - 6x + c = 0$ are not real , then c may be equal $\dots\dots\dots$
- (a) 2 (b) -3 (c) 4 (d) 1
- (4) If the product of the two roots of the equation $ax^2 + (a + 4)x + a = 6$ equals -2 , then $a = \dots\dots\dots$
- (a) 3 (b) -2 (c) 5 (d) 2
- (5) If $f(x) = x + 3$, $x \in]-5, 6[$, then $f(x)$ will be negative when $x \in \dots\dots\dots$
- (a) $]-5, -3[$ (b) $]-\infty, -3[$ (c) $]-3, \infty[$ (d) $]-3, 6[$
- (6) If L , M are the two roots of the equation $x^2 - 5x + 6 = 0$, then the equation whose roots are $2L$, $2M$ is $\dots\dots\dots$
- (a) $x^2 - 10x + 24 = 0$ (b) $x^2 + 10x - 24 = 0$
- (c) $x^2 - 10x + 12 = 0$ (d) $x^2 + 10x - 12 = 0$

2 Choose the correct answer from those given :

- (1) The angle with measure -750° is lies in the $\dots\dots\dots$ quadrant.
- (a) first (b) second (c) third (d) fourth
- (2) The length of the arc opposite to the inscribed angle of measure 30° in a circle with a diameter of 24 cm. equals $\dots\dots\dots$
- (a) π (b) 2π (c) 4π (d) 3π

(3) The simplest form of the expression $\cos(180^\circ - \theta) + \sin(90^\circ + \theta) = \dots\dots\dots$

- (a) $2 \cos \theta$ (b) zero (c) 2 (d) $2 \sin \theta$

(4) If $f(\theta) = 3 \cos \theta$, where $0 \leq \theta < 2\pi$, then the range of f is $\dots\dots\dots$

- (a) $[-3, 3]$ (b) $[-3, 0]$ (c) $[0, 3]$ (d) $[-1, 1]$

(5) If $2 \cos \theta + 1 = 0$, where θ is the measure of the greatest positive angle, $\theta \in [0, 2\pi[$, then $\theta = \dots\dots\dots^\circ$

- (a) 60 (b) 240 (c) 120 (d) 300

(6) If $\sin \theta = \frac{3}{5}$, where $\frac{\pi}{2} < \theta < \pi$, then $\cos \theta = \dots\dots\dots$

- (a) $\frac{3}{5}$ (b) $-\frac{4}{5}$ (c) $\frac{4}{5}$ (d) $-\frac{3}{5}$

3 Choose the correct answer from those given :

(1) The conjugate of the number $(i - i^2)$ is $\dots\dots\dots$

- (a) $1 - i$ (b) $1 + i$ (c) $-i - 1$ (d) $i - 1$

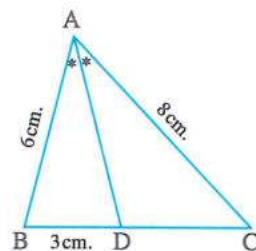
(2) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$, $AC = 8$ cm.

, $AB = 6$ cm., $BD = 3$ cm.

, then $CD = \dots\dots\dots$ cm.

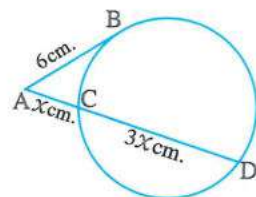
- (a) 4 (b) 3
(c) 5 (d) 2



(3) In the opposite figure :

$\overline{AB}$ is tangent segment, then $x = \dots\dots\dots$

- (a) $2\sqrt{3}$ (b) 3
(c) 4 (d) 6



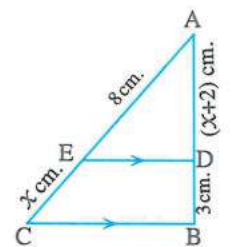
(4) In the opposite figure :

$\overline{DE} \parallel \overline{CB}$, $AE = 8$ cm., $AD = (x + 2)$ cm.

, $BD = 3$ cm., $EC = x$ cm.

, then $x = \dots\dots\dots$ cm.

- (a) 6 (b) 4
(c) 5 (d) 8



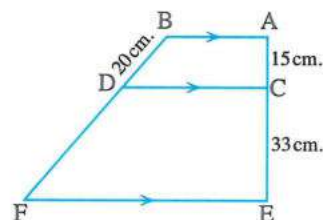
(5) In the opposite figure :

$\overline{AB} \parallel \overline{CD} \parallel \overline{EF}$, $AC = 15$ cm.

, $CE = 33$, $BD = 20$ cm.

, then $BF = \dots\dots\dots$ cm.

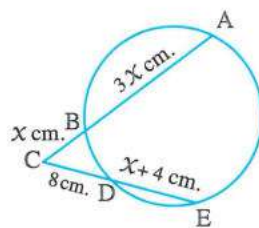
- (a) 44 (b) 21
(c) 64 (d) 48



(6) In the opposite figure :

$x = \dots\dots\dots$

- (a) 5
- (b) 3
- (c) 6
- (d) 9



4 Choose the correct answer from those given :

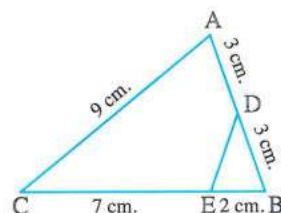
(1) In the opposite figure :

$AD = 3$ cm. , $BD = 3$ cm.

, $AC = 9$ cm. , $BE = 2$ cm. , $CE = 7$ cm.

, then $DE \dots\dots\dots$ cm.

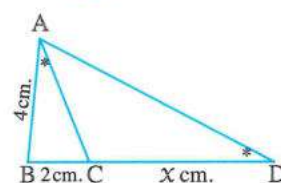
- (a) 3
- (b) 2
- (c) 4.5
- (d) 5



(2) In the opposite figure :

$m(\angle D) = m(\angle CAB)$, then $x = \dots\dots\dots$

- (a) 6
- (b) 4
- (c) 8
- (d) 16



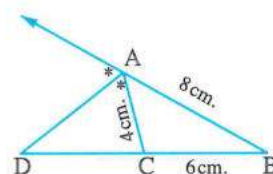
(3) In the opposite figure :

$AB = 8$ cm. , $AC = 4$ cm.

, $BC = 6$ cm.

, then $CD = \dots\dots\dots$ cm.

- (a) 6
- (b) 4
- (c) 8
- (d) 2



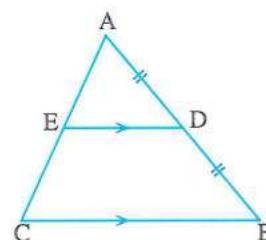
(4) In the opposite figure :

$AD = DB$

, area $(\triangle ADE) = 15$ cm²

, then the area $(DBCE) = \dots\dots\dots$ cm²

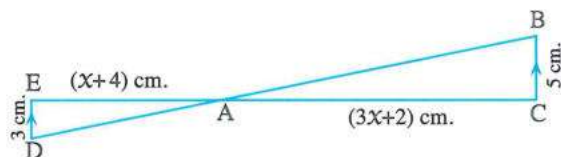
- (a) 40
- (b) 45
- (c) 30
- (d) 60



(5) In the opposite figure :

$\triangle ABC \sim \triangle ADE$, then $x = \dots\dots\dots$

- (a) 5.5
- (b) 4.5
- (c) 3.5
- (d) 6.5



(6) If the ratio of the perimeters of two similar triangles is 1 : 4 , then the ratio between their areas is

- (a) 1 : 2
- (b) 1 : 4
- (c) 1 : 16
- (d) 1 : 8

(7) The two similar polygons are congruent if their similarity factor k is

- (a) $k = \frac{1}{2}$
- (b) $k < 1$
- (c) $k = 1$
- (d) $0 < k < 1$

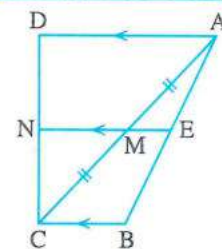
- 5 If L, M are the two roots of the equations : $X^2 - 5X + 7 = 0$, then form the equation whose roots L^2, M^2

6 In the opposite figure :

$\overline{AD} \parallel \overline{NE} \parallel \overline{CB}$, $AM = MC$, $AE = 2X$ cm. ,

$EB = (X + 5)$ cm. , $DN = 3y$ cm. , $NC = (X + 4)$ cm.

Find : X, y .



10 El-Dakahlia Governorate



Mathematics Supervision

1 Choose the correct answer from those given :

- (1) The additive inverse of the complex number $(4 - 7i)$ is
- (a) $4 + 7i$ (b) $-4 + 7i$ (c) $-4 - 7i$ (d) $4 - 7i$
- (2) The two roots of the equation $cX^2 + aX + b = 0$ are two complex and non real roots if
- (a) $b^2 - 4ac < 0$ (b) $a^2 - 4bc < 0$
(c) $c^2 - 4ab < 0$ (d) $b^2 - 4ac > 0$
- (3) If the function $f(X) = X + 3$, $X \in]-5, 6[$, then $f(X)$ is negative at $X \in$
- (a) $] -5, -3[$ (b) $] -\infty, 3[$ (c) $] 3, \infty[$ (d) $] -3, 6[$
- (4) If L, M are the two roots of the equation $3X^2 - 8X + 2 = 0$, then $\frac{1}{L} + \frac{1}{M} =$
- (a) $\frac{4}{3}$ (b) 4 (c) $-\frac{4}{3}$ (d) $\frac{2}{3}$
- (5) If the point $(2, -1)$ is the vertex of the curve of quadratic equation $f(X)$, L, M are the two roots of the equation $f(X) = 0$, then $L + M =$
- (a) 2 (b) 4 (c) -2 (d) -4
- (6) If $f(X) = X^2 - 6X + 9$, then the solution set of the inequality $f(X) \leq 0$ in $\mathbb{R}$ is
- (a) $\mathbb{R}$ (b) $\{3\}$ (c) $\mathbb{R} -]-3, 3[$ (d) $[-3, 3]$

2 Choose the correct answer from those given :

- (1) L, L^2 are the two roots of the equation $2X^2 + bX + 54 = 0$, then $-3L^2 - b =$
- (a) -12 (b) -3 (c) -51 (d) ± 3
- (2) The quadrantal angle measure is multiple of
- (a) 360° (b) 180° (c) 90° (d) 60°
- (3) The radian measure of a regular heptagon exterior angel equals
- (a) $\frac{\pi}{7}$ (b) $\frac{2\pi}{7}$ (c) $\frac{3\pi}{7}$ (d) $\frac{4\pi}{7}$

(4) If $\cos \theta > 0$, $\sin \theta < 0$, then θ lies in the quadrant.

- (a) first (b) second (c) third (d) fourth

(5) If $\sin \theta = \frac{-1}{2}$, $\tan \theta > 0$, then $\theta =$

- (a) 30° (b) 150° (c) 210° (d) 330°

(6) $\sin^{-1} \frac{\sqrt{3}}{2} + \cos^{-1} \frac{1}{2} =$

- (a) $\frac{\pi}{2}$ (b) $\frac{3\pi}{2}$ (c) $\frac{2\pi}{3}$ (d) $\frac{\pi}{3}$

3 Choose the correct answer from those given :

(1) ABCD is a parallelogram, $AB = 6$ cm., $BC = 8$ cm., its area 40 cm^2 , then $m(\angle A) \approx$, where $\angle A$ is an acute angle.

- (a) 37° (b) 56° (c) 53° (d) 34°

(2) The two similar polygons are congruent if the scale factor K satisfies

- (a) $K = \frac{1}{2}$ (b) $K = 1$ (c) $K > 1$ (d) $0 < K < 1$

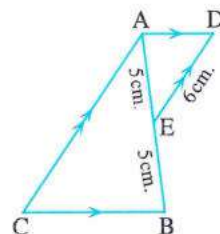
(3) In the opposite figure :

$\overline{AD} \parallel \overline{BC}$, $\overline{AC} \parallel \overline{ED}$, $AE = 5$ cm.

, $ED = 6$ cm., $EB = 5$ cm.

, then AC cm.

- (a) 6 (b) 9
(c) 12 (d) 15

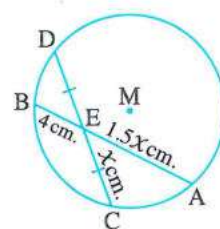


(4) In the opposite figure :

$DE = EC = x$ cm., $BE = 4$ cm., $AE = 1.5x$ cm.

, then $x =$ cm.

- (a) 6.5 (b) 13
(c) 6 (d) 36



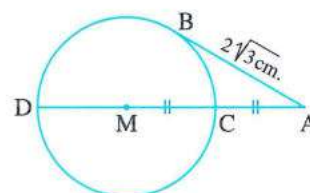
(5) The ratio between the perimeters of two similar polygons is $4 : 9$, so the ratio between their areas is

- (a) $4 : 9$ (b) $9 : 4$ (c) $2 : 3$ (d) $16 : 81$

(6) In the opposite figure :

The length of the radius of circle M = cm.

- (a) 2 (b) 3
(c) 4 (d) 5



4 Choose the correct answer from those given :

(1) In the opposite figure :

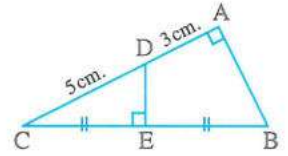
EC = cm.

(a) 3

(c) 5

(b) 4

(d) $2\sqrt{5}$



(2) In the opposite figure :

A circle M of diameter length 12 cm.

, MC = CB , AC = (BC + 1) cm.

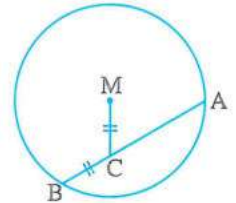
, then AB = cm.

(a) 4

(b) 6

(c) 8

(d) 9



(3) In the opposite figure :

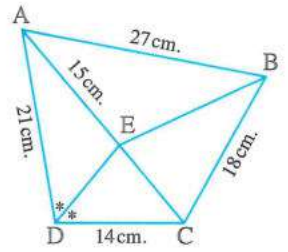
Which of the following statement if false ?

(a) CE = 10 cm.

(b) $\overrightarrow{BE}$ Bisect $\angle ABC$

(c) $BE = 4\sqrt{21}$ cm.

(d) $DE = 12\sqrt{2}$ cm.



(4) In the opposite figure :

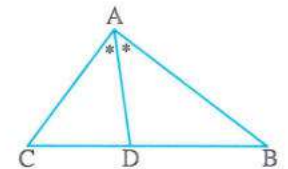
$\overrightarrow{AD}$ bisects $\angle A$, then $AB \times CD = \dots\dots\dots$

(a) $AC \times BD$

(b) $(AD)^2$

(c) $AD \times BD$

(d) $AC \times AB$



(5) In the opposite figure :

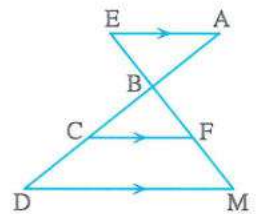
AB : CD : BC

(a) EB : FM : BF

(b) AE : MD : FC

(c) EB : CD : BC

(d) EB : EM : EF



(6) In the opposite figure :

EC = X , AE = 12 cm , DB = 3 cm.

, AD = X + 5 cm. , $\overline{DE} \parallel \overline{BC}$

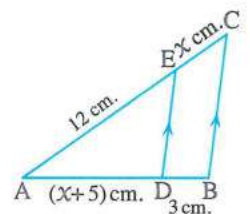
, then X =

(a) 4

(b) 12

(c) 9

(d) 3



(7) In the opposite figure :

$\overline{DE} \parallel \overline{BC}$, $AD : AB = 2 : 5$

, $EA = x + 4$ cm. , $EC = 2x + 3$ cm.

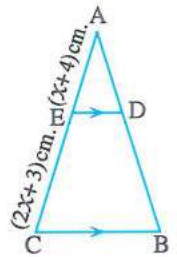
, then $x = \dots\dots\dots$ cm.

(a) 8

(b) 6

(c) 4

(d) 2



5 Find in $\mathbb{R}$ the solution set of the inequality : $(x - 1)(x - 2) \leq 6$

6 ABC is a triangle in which : $AB = 8$ cm. , $AC = 6$ cm. , $BC = 7$ cm. , $\overrightarrow{AD}$ bisects $\angle BAC$ and intersects $\overline{BC}$ at D , Find the length of each of : $\overline{DB}$, $\overline{DC}$

11 Ismailia Governorate



Central Mathematics Supervision
Official Language School

1 Choose the correct answer from those given :

(1) If one of the roots of the equation : $x^2 - (b - 5)x + 3 = 0$ is the additive inverse of the other , then $b = \dots\dots\dots$

(a) - 5

(b) - 3

(c) 5

(d) 3

(2) The solution set of the equation : $2x^2 + 8 = 0$ is $\dots\dots\dots$

(a) $\{4, -4\}$

(b) $\{4i, -4i\}$

(c) $\{-2, 2\}$

(d) $\{-2i, 2i\}$

(3) The roots of the equation : $ax^2 - 12x + 9 = 0$ are two different real , if $\dots\dots\dots$

(a) $a < 4$

(b) $a > 4$

(c) $a = 4$

(d) $a = 5$

(4) The function f where : $f(x) = 4 - x$ is negative when $\dots\dots\dots$

(a) $x > 4$

(b) $x < 4$

(c) $x = 4$

(d) $x = -4$

(5) The function f where : $f(x) = x^2 + 4x - 5$ is not negative at $\dots\dots\dots$

(a) $]-5, 1[$

(b) $\mathbb{R} -]-5, 1[$

(c) $\mathbb{R} - [-5, 1]$

(d) $[-5, 1]$

(6) The solution set of the inequality : $7 + x^2 - 4x \geq 0$ is $\dots\dots\dots$

(a) $\mathbb{R}$

(b) $\mathbb{R} -]-4, 7[$

(c) $]-5, 1[$

(d) $\emptyset$

2 Choose the correct answer from those given :

(1) The simplest form of the imaginary number i^{2026} is $\dots\dots\dots$

(a) i

(b) 1

(c) - 1

(d) - i

(2) Two similar rectangles , the dimensions of the first are 8 cm. , 12 cm and the perimeter of the second is 150 cm. The length of the second rectangle = $\dots\dots\dots$ cm.

(a) 20

(b) 30

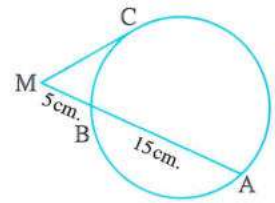
(c) 40

(d) 45

(3) In the opposite figure :

MC = cm.

- (a) 10 (b) 20
(c) 15 (d) 5



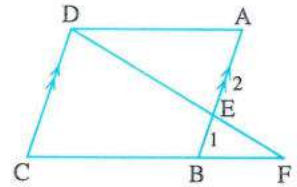
(4) In the opposite figure :

ABCD is a parallelogram.

All the following sentences

is right except

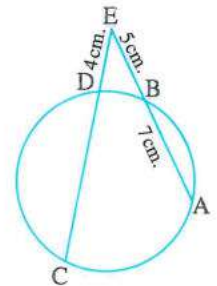
- (a) $\triangle DCF \sim \triangle EAD$ (b) $\text{area}(\triangle DCF) : \text{area}(\triangle EAD) = 9 : 4$
(c) $AE : DC = 2 : 3$ (d) $\text{perimeter of } \triangle DCF : \text{perimeter of } \triangle EAD = 2 : 3$



(5) In the opposite figure :

DC = cm.

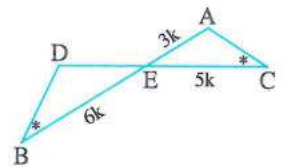
- (a) 11
(b) 15
(c) 30
(d) 12



(6) In the opposite figure :

If the area of $\triangle ACE = 150 \text{ cm}^2$,
then the area of $\triangle DEB = \dots\dots\dots \text{cm}^2$

- (a) 150 (b) 216
(c) 300 (d) 180

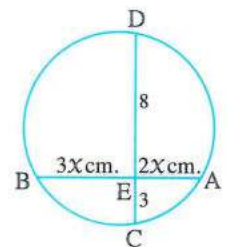


3 Choose the correct answer from those given :

(1) In the opposite figure :

$x = \dots\dots\dots$

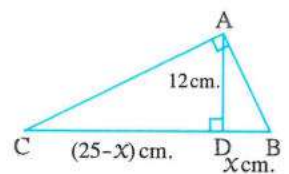
- (a) 4
(b) ± 2
(c) 2
(d) 24



(2) In the opposite figure :

$x = \dots\dots\dots$

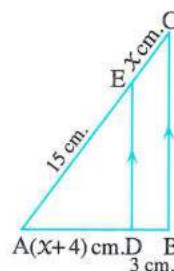
- (a) 9 (b) 9 or 16
(c) 16 (d) 12



(3) In the opposite figure :

$x = \dots\dots\dots$

- (a) 9
- (b) 9 or 5
- (c) 5
- (d) 12

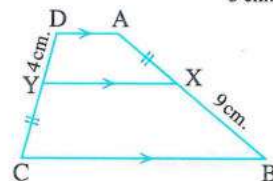


(4) In the opposite figure :

$AX = CY$, $\overline{AD} \parallel \overline{XY} \parallel \overline{BC}$

, then $YC = \dots\dots\dots$ cm.

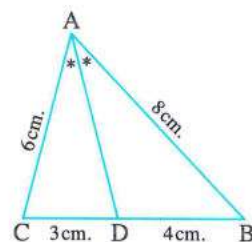
- (a) 36
- (b) 13
- (c) 5
- (d) 6



(5) In the opposite figure :

The length of $\overline{AD} = \dots\dots\dots$ cm.

- (a) 12
- (b) 8
- (c) 6
- (d) 21



(6) An arc of length 7π cm. in a circle of radius 21 cm. subtends a central angle of measure $\dots\dots\dots^\circ$

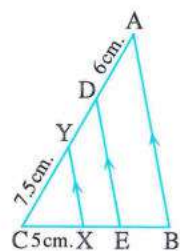
- (a) 30
- (b) 60
- (c) 90
- (d) 120

4 Choose the correct answer from those given :

(1) In the opposite figure :

$BE = \dots\dots\dots$ cm.

- (a) 8
- (b) 6
- (c) 2
- (d) 4



(2) If an angle θ drawn in the standard position whose terminal side intersects the unit circle at the point $\left(\frac{-3}{5}, \frac{4}{5}\right)$, then $\tan \theta = \dots\dots\dots$

- (a) $\frac{-3}{5}$
- (b) $\frac{4}{5}$
- (c) $\frac{-4}{3}$
- (d) $\frac{4}{3}$

(3) $\cos \theta - \sin (270^\circ + \theta) = \dots\dots\dots$

- (a) zero
- (b) $2 \cos \theta$
- (c) $\sin \theta \cos \theta$
- (d) $2 \sin \theta$

(4) The maximum value of the function : $f(x) = 4 \sin 3\theta$ is $\dots\dots\dots$

- (a) $[-1, 1]$
- (b) $[-4, 4]$
- (c) $[-3, 3]$
- (d) 4

(5) In the opposite figure :

$x = \dots\dots\dots$ cm.

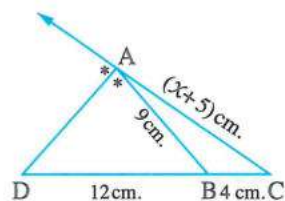
- (a) 7 (b) 9
(c) 11 (d) 12

(6) If $\tan \theta = 1.8$ and $90^\circ \leq \theta \leq 360^\circ$, then $m(\angle \theta) = \dots\dots\dots^\circ$

- (a) 60.945° (b) 779.055° (c) 240.945° (d) 299.055°

(7) $\tan \theta = \cot \theta$, $\theta = \dots\dots\dots^\circ$ (where θ is an angle)

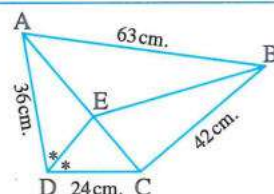
- (a) 45 (b) 30 (c) 60 (d) 15



5 Find the equation whose roots are 1 more than the roots of the equation : $x^2 - 5x - 14 = 0$

6 In the opposite figure :

Prove that : $\overrightarrow{BE}$ bisects $(\angle ABC)$



12 Kafr El-Sheikh Governorate



Maths Supervision

1 Choose the correct answer from those given :

(1) The solution set of the inequality $x^2 < 4x$ in $\mathbb{R}$ is

- (a) $\mathbb{R} - [0, 4]$ (b) $]0, 4[$ (c) $]4, \infty[$ (d) $]-4, \infty[$

(2) The angle of measure $\frac{-4\pi}{9}$ its terminal side lies in quadrant.

- (a) first (b) second (c) third (d) fourth

(3) If $\triangle ABC \sim \triangle XYZ$, where $AB = 2m - 1$, $XY = m + 2$, $BC = 15$ cm., $YZ = 9$ cm., then $m = \dots\dots\dots$

- (a) 10 (b) 11 (c) 13 (d) 15

(4) If L, M are the two roots of the quadratic equation $2x^2 - 5x + 1 = 0$, then the quadratic equation whose roots are $L + M, LM$ is

- (a) $4x^2 - 4x + 1 = 0$ (b) $4x^2 - 5x + 2 = 0$
(c) $4x^2 - 12x + 5 = 0$ (d) $4x^2 + x + 5 = 0$

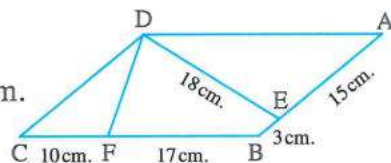
(5) In the opposite figure :

ABCD parallelogram in which $AE = 15$ cm.,

$EB = 3$ cm., $BF = 17$ cm., $FC = 10$ cm., $DE = 18$ cm.

, then $DF = \dots\dots\dots$ cm.

- (a) 20 (b) 16
(c) 15 (d) 12



- (6) If L, M are the two roots of the quadratic equation $x^2 - 7x + C = 0$ and $L^2M + LM^2 = 28$, then $C = \dots\dots\dots$

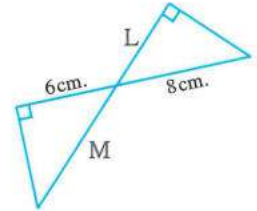
(a) 4 (b) -4 (c) 21 (d) 14

2 Choose the correct answer from those given :

(1) In the opposite figure :

If L, M are the two roots of equation $x^2 + bx + c = 0$, then $c = \dots\dots\dots$

(a) 14 (b) 48
(c) 2 (d) 12



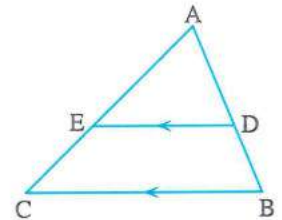
(2) The conjugate of the number $3 + i^5$ is $\dots\dots\dots$

(a) $-3 - i$ (b) $3 + i$ (c) $3 - i$ (d) $-3 + i$

(3) In the opposite figure :

ABC is a triangle in which $\overline{DE} \parallel \overline{BC}$, $AD : DB = 5 : 3$ if the area of triangle $ADE = 50 \text{ cm}^2$, then the area of figure $DBCE$ equals $\dots\dots\dots \text{cm}^2$

(a) 128 (b) 100
(c) 64 (d) 78



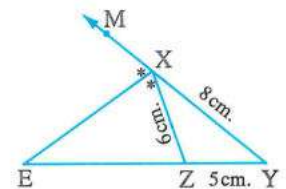
(4) The central angle which subtends an arc of length $6\pi \text{ cm}$, in a circle of diameter length 18 cm, then its degree measure = $\dots\dots\dots$

(a) 60° (b) 135° (c) 120° (d) 240°

(5) In the opposite figure :

XYZ is a triangle in which $\overline{XE}$ bisects the exterior angle of the triangle at X if $XY = 8 \text{ cm}$, $YZ = 5 \text{ cm}$, $XZ = 6 \text{ cm}$, then $XE = \dots\dots\dots \text{cm}$.

(a) $6\sqrt{7}$ (b) $4\sqrt{7}$
(c) $6\sqrt{3}$ (d) $3\sqrt{3}$



(6) If $x + yi = -2 + 7i$, then $x + y = \dots\dots\dots$

(a) -14 (b) 5 (c) -9 (d) 14

3 Choose the correct answer from those given :

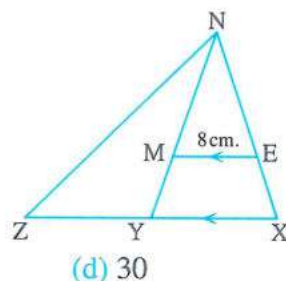
(1) if $\sec 4\theta = \csc 5\theta$, then $\tan(4\theta + 20^\circ) = \dots\dots\dots$ (where $\theta \in [0, \frac{\pi}{6}]$)

(a) $\sqrt{3}$ (b) zero (c) $\frac{1}{\sqrt{3}}$ (d) 1

(2) In the opposite figure :

NXZ is a triangle where M is the intersection point of medians of triangle
if $\overline{ME} \parallel \overline{XY}$, $ME = 8$ cm.
then $XZ = \dots\dots\dots$ cm.

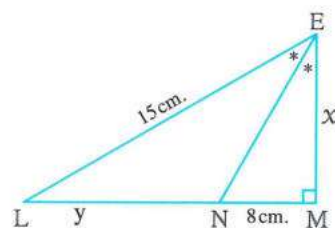
- (a) 12 (b) 24 (c) 18



(3) In the opposite figure :

EML is right angled triangle at M ,
 $EM = x$ cm, $NL = y$ cm, $EL = 15$ cm,
 $MN = 8$ cm, if $\overline{EN}$ bisects $(\angle MEL)$
then the area of triangle $ENL = \dots\dots\dots$ cm^2

- (a) 120 (b) 60 (c) 30 (d) 45



(4) If the two roots of the equation $(x - 2m)(x + 8) = 0$ are equal, then $m = \dots\dots\dots$

- (a) -4 (b) -8 (c) 4 (d) -2

(5) The two dimensions of a rectangle are 9 cm, 15 cm. then the area of another rectangle similar to it if the scale factor is $\frac{1}{3}$ equal $\dots\dots\dots$ cm^2

- (a) 96 (b) 15 (c) 1215 (d) 135

(6) If $\tan \theta = \frac{3}{4}$, where $\pi < \theta < \frac{3\pi}{2}$ then $\sin(270^\circ - \theta) = \dots\dots\dots$

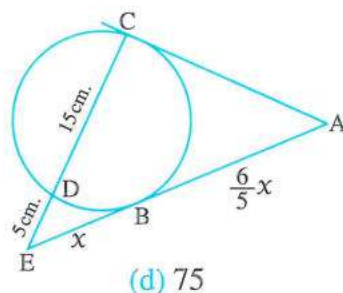
- (a) $\frac{4}{5}$ (b) $\frac{3}{5}$ (c) $-\frac{4}{5}$ (d) $-\frac{3}{5}$

4 Choose the correct answer from those given :

(1) In the opposite figure :

$\overline{AB}$, $\overline{AC}$ are two tangent segments to the circle
at B , C , $ED = 5$ cm, $DC = 15$ cm, $BE = x$ cm,
 $AB = \frac{6}{5}x$, then the perimeter of the triangle AEC
equal $\dots\dots\dots$ cm.

- (a) 45 (b) 54 (c) 60 (d) 75

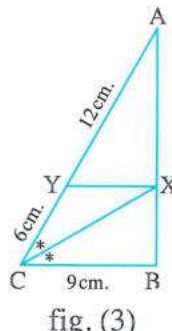
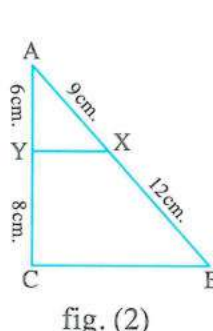
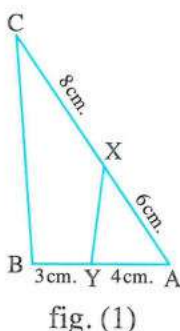


(2) The range of the function $f(x) = 4 \sin 2x$ is $\dots\dots\dots$

- (a) $\{2, 4\}$ (b) $[-1, 1]$ (c) $[-2, 2]$ (d) $[-4, 4]$

(3) Which of the following figures has $\overline{XY} \parallel \overline{BC}$ $\dots\dots\dots$

- (a) fig. (1)
(b) fig. (2)
(c) fig. (3)
(d) fig. (2), (3)



(4) The sign of the function $f(x) = 2x + 6$ is negative in the interval

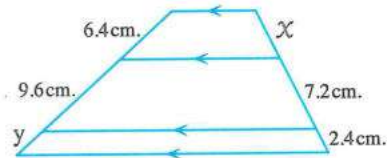
- (a) $]-3, \infty[$ (b) $]3, \infty[$ (c) $]-\infty, 3[$ (d) $]-\infty, -3[$

(5) Use the given in the figure opposite :

then the value of $x + y = \dots\dots\dots$ cm.

- (a) 8
(c) 10.5

- (b) 11
(d) 12.5



(6) If $\tan \theta = -1$, where θ is the smallest positive angel, then $\theta = \dots\dots\dots$ rad

- (a) $\frac{2\pi}{3}$ (b) $\frac{5\pi}{3}$ (c) $\frac{3\pi}{4}$ (d) $\frac{5\pi}{6}$

(7) In the opposite figure :

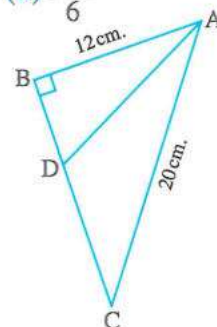
ABC is a right-angled triangle at B, $AB = 12$ cm.

, $AC = 20$ cm. if $\overrightarrow{AD}$ bisects $\angle BAC$.

, then $DC = \dots\dots\dots$ cm.

- (a) 16
(c) 6

- (b) 10
(d) 9



5 If L, M are the two roots of the quadratic equation $x^2 - 4x - 5 = 0$ where $L > M$, then form the quadratic equation whose roots are : $2L - M$, $L + 3M$

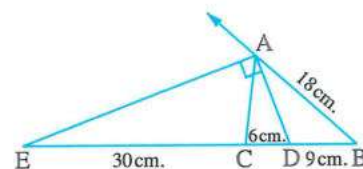
6 In the opposite figure :

ABC is a triangle, $\overrightarrow{AE}$ bisects $\angle BAC$ externally,

$D \in \overline{BC}$ where $\overline{AD} \perp \overline{AE}$, $BD = 9$ cm.,

$DC = 6$ cm., $CE = 30$ cm., $AB = 18$ cm.,

find the length of $\overline{AE}$



13

El-Beheira Governorate



El-Delngat Directorate
Maths Supervision

1 Choose the correct answer from those given :

(1) $7 + 7i + 7i^2 + 7i^3 = \dots\dots\dots$

- (a) zero (b) 7 (c) 28 (d) 28 T

(2) An angle whose measure is 600° in standard position is equivalent to an angle whose measure is $\dots\dots\dots^\circ$

- (a) 120 (b) -60 (c) 420 (d) 240

(3) If k is the similarity coefficient of polygon M_1 to polygon M_2 , where $3k - 4 \in]-4, -1[$, then polygon $M_1 \dots\dots\dots$ polygon M_2

- (a) enlargement (b) reduction (c) congruent (d) other

(4) If the equation $X^2 = k - 5$ has two different imaginary roots, then

- (a) $k > 5$ (b) $k < 5$ (c) $k \geq 5$ (d) $k \leq 5$

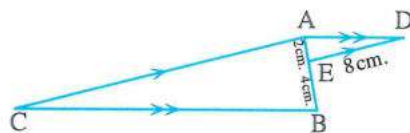
(5) If the measure of an angle is $\emptyset$ in standard position where $\pi < \emptyset < \frac{3}{2}\pi$ which of the following is always true?

- (a) $\sin \emptyset \cos \emptyset < 0$ (b) $\sec \emptyset \csc \emptyset < 0$
(c) $\tan \emptyset \cot \emptyset < 0$ (d) $\sin \emptyset \tan \emptyset < 0$

(6) In the opposite figure :

AC = cm.

- (a) 16 (b) 24 (c) 12 (d) 15



2 Choose the correct answer from those given :

(1) If L and M are the roots of the equation : $2X^2 - 4X + 3 = 0$, then $2L^2 - 4L - 3 = \dots\dots\dots$

- (a) 0 (b) 6 (c) -6 (d) 3

(2) If $\cos \theta = 0.342$, where θ the measure of the smallest positive angle, then $\theta = \dots\dots\dots$ to the nearest degree.

- (a) 70° (b) 116° (c) 244° (d) 296°

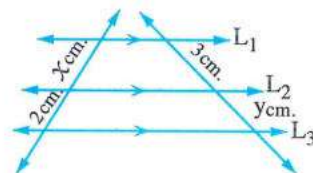
(3) Two similar polygons, the ratio between the lengths of two corresponding sides is 1 : 3, and the difference between their areas is 32 cm^2 , then the area of the smaller polygon = cm^2

- (a) 4 (b) 50 (c) 32 (d) 16

(4) In the opposite figure :

If $X = 2$, then

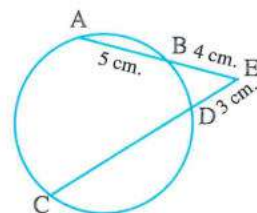
- (a) $y = 3$ (b) $y > 3$
(c) $y < 3$ (d) $y \leq 3$



(5) In the opposite figure :

DC = cm.

- (a) 6 (b) 5
(c) 4 (d) 9



(6) If L, M are the roots of the equation : $X^2 - (k - 9)X - k - 5 = 0$ where $L < 0 < M$, $|L| > |M|$, then $k \in \dots\dots\dots$

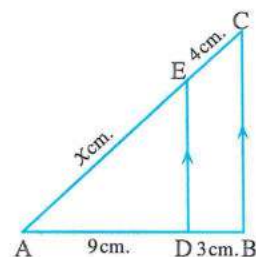
- (a) $]-5, 9[$ (b) $[-5, 9]$ (c) $]-5, \infty[$ (d) $]-\infty, 9[$

3 Choose the correct answer from those given :

(1) In the opposite figure :

$x = \dots\dots\dots$

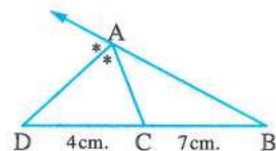
- (a) 4 (b) 9
(c) 12 (d) 3



(2) In the opposite figure :

$AB : AC = \dots\dots\dots$

- (a) 7 : 4 (b) 7 : 11
(c) 11 : 7 (d) 11 : 4



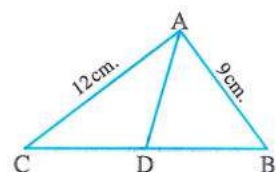
(3) In the opposite figure :

If the area of $\triangle ABD = 21 \text{ cm}^2$

And the area of $\triangle ACD = 28 \text{ cm}^2$

, then $\overrightarrow{AD} = \dots\dots\dots$

- (a) perpendicular to $\overline{BC}$ (b) bisects $\angle BAC$
(c) passes through the midpoint of $\overline{BC}$ (d) all of the previous.



(4) The quadratic equation whose roots are the dimension of a rectangle with an area of 9 cm^2 and a perimeter of 16 cm. is $\dots\dots\dots$

- (a) $x^2 - 16x + 9 = 0$ (b) $x^2 + 16x - 9 = 0$
(c) $x^2 - 8x - 9 = 0$ (d) $x^2 - 8x + 9 = 0$

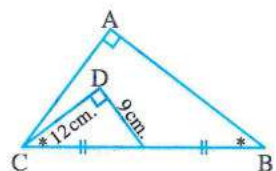
(5) If $\sin 2\theta = \cos 4\theta$ where θ is a positive acute angle, then $\tan (3\theta) = \dots\dots\dots$

- (a) -1 (b) 2 (c) 1 (d) -2

(6) In the opposite figure :

The area of $\triangle ABC = \dots\dots\dots \text{ cm}^2$

- (a) 12 (b) 216
(c) 18 (d) 24



4 Choose the correct answer from those given :

(1) If $f(x) = x - 2$ where $x \in]-4, 3[$, then f is positive when $x \in \dots\dots\dots$

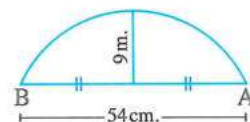
- (a) $]-\infty, -2[$ (b) $]-2, 3[$ (c) $]-4, -2[$ (d) $]2, 3[$

(2) The distance covered by the tip of the minute hand in 10 minutes if the length of this hand is 6 cm. is $\dots\dots\dots \text{ cm}$.

- (a) 4π (b) 3π (c) 2π (d) 6π

(3) In the opposite figure :

If an ant moves from point A to point B and its movement is in the form of an arc , then the length of the radius of the arc is equal to meters.



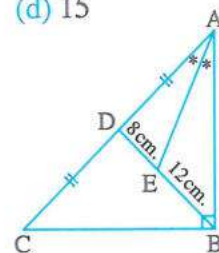
- (a) 35 (b) 27 (c) 45 (d) 25
- (4) If $x^2 - 2x + 2 = 0$, then $x = \dots\dots\dots$
- (a) $2i \pm 2$ (b) $-2 \pm i$ (c) $1 \pm i$ (d) $-2i - 1$
- (5) If $f(x) = A \cos Bx$ where $A > 0$, $B > 0$ periodic function , its period π and range $[-4, 4]$, then $A + B = \dots\dots\dots^\circ$
- (a) 4 (b) 7 (c) 6 (d) 5
- (6) $\overline{XY} \cap \overline{AL} = \{M\}$ where $\overline{XA} \parallel \overline{LY}$, if $XM = 6$ cm. , $YM = 10$ cm. , $AL = 40$ cm. , then $AM = \dots\dots\dots$ cm.

- (a) 12.5 (b) 13 (c) 13.5 (d) 15

(7) In the opposite figure :

$AB = \dots\dots\dots$ cm.

- (a) 15 (b) 12
- (c) 10 (d) 30



- 5 ΔABC is a right angled triangle at B draw $\overline{AD}$ bisects $\angle A$ and intersects $\overline{BC}$ at D. If the length of $\overline{BD} = 12$ cm. , $BA : AC = 3 : 5$, find the perimeter of ΔABC

- 6 Find the sign of the function f where $f(x) = x^2 + 2x + 3$ in the interval $[-2, 4]$ and from that determine the solution set of the inequality $f(x) \leq 0$

14 El-Menia Governorate



Bani Mazar Administration
Math Department

1 Choose the correct answer from those given :

- (1) $i^{42} = \dots\dots\dots$
- (a) 1 (b) -1 (c) i (d) -i
- (2) If $x + yi = \frac{15}{2-i}$, then $x \times y = \dots\dots\dots$
- (a) 3 (b) 4 (c) 5 (d) 18
- (3) If the two roots of the equation : $x^2 - 4x + k = 0$ are equal real number , then the value of $k = \dots\dots\dots$
- (a) 4 (b) 6 (c) -4 (d) -6

- (4) If one of two roots of the equation : $x^2 - 4x + k = 0$ exceeds the other by 2 , then the value of $k = \dots\dots\dots$
- (a) 3 (b) -3 (c) 5 (d) -5
- (5) The quadratic equation whose two roots 2 and $\frac{1}{2}$ is $\dots\dots\dots$
- (a) $x^2 - 5x + 2 = 0$ (b) $2x^2 - 5x + 2 = 0$
(c) $2x^2 + 5x - 2 = 0$ (d) $2x^2 - 5x - 2 = 0$
- (6) The function $f(x) = 2x - 6$ is non-negative in the interval $\dots\dots\dots$
- (a) $]3, \infty[$ (b) $[3, \infty[$ (c) $] - \infty, 3]$ (d) $] - \infty, 3[$

2 Choose the correct answer from those given :

- (1) solution set of the inequality : $x^2 - 9 \leq 0$ is $\dots\dots\dots$
- (a) $] - 3, 3[$ (b) $] - 3, 3]$ (c) $[- 3, 3]$ (d) $\mathbb{R} - [- 3, 3]$
- (2) The terminal side of the angle of measure $-\frac{\pi}{6}$ lies on $\dots\dots\dots$ quadrant.
- (a) first (b) second (c) third (d) fourth
- (3) In a circle if the length of an arc of a circle that opposite the central angle equal to the length of a radius of a circle , then the measure of central angle = $\dots\dots\dots^{\text{rad}}$
- (a) 1 (b) 2 (c) 3 (d) 4
- (4) If $\cos \theta = \frac{1}{2}$, $\tan \theta = -\sqrt{3}$, then $\theta = \dots\dots\dots$
- (a) 60° (b) 120° (c) 240° (d) 300°
- (5) If $\sin(7\theta) = \cos(3\theta)$, then θ can be equal $\dots\dots\dots^\circ$
- (a) 9 (b) 10 (c) 90 (d) 30
- (6) The value of $\sin(90^\circ - \theta) + \cos(180^\circ + \theta) = \dots\dots\dots$
- (a) 1 (b) -1 (c) 0 (d) 2

3 Choose the correct answer from those given :

- (1) The range of the function $f : f(\theta) = 2 \sin 7\theta$ is $\dots\dots\dots$
- (a) $[- 2, 2]$ (b) $] - 2, 2[$ (c) $[- 7, 7]$ (d) $] - 7, 7[$
- (2) If $\triangle ABC \sim \triangle DEF$, $AB : DE = 2 : 1$ and $BC = 8$ cm. , then $EF = \dots\dots\dots$
- (a) 16 (b) 4 (c) 8 (d) 2
- (3) Two similar polygons , the ratio between two corresponding sides in them is 1 : 2 and the area of the smaller polygon is 12 cm^2 , then the area of the greater polygon = $\dots\dots\dots \text{ cm}^2$
- (a) 6 (b) 24 (c) 48 (d) 96

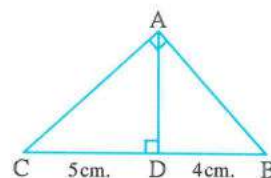
(4) In the opposite figure :

$m(\angle BAC) = 90^\circ$, $\overline{AD} \perp \overline{BC}$

, $CD = 5$ cm. , $BD = 4$ cm.

, then $AB = \dots\dots\dots$ cm.

- (a) 4 (b) 5 (c) 6



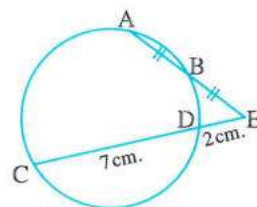
(d) 10

(5) In the opposite figure :

$EB = BA$, $ED = 2$ cm. , $CD = 7$ cm.

, then $AE = \dots\dots\dots$ cm.

- (a) 3 (b) 6
(c) 9 (d) 12

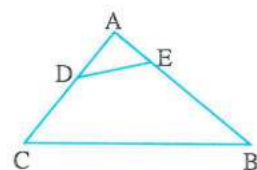


(6) In the opposite figure :

If $\triangle ABC \sim \triangle ADE$, $DE : BC = 1 : 3$

, then $\frac{\text{area}(\triangle EDA)}{\text{area}(\text{figure DCBE})} = \dots\dots\dots$ cm.

- (a) 1 : 3 (b) 1 : 9
(c) 1 : 8 (d) 8 : 1



4 Choose the correct answer from those given :

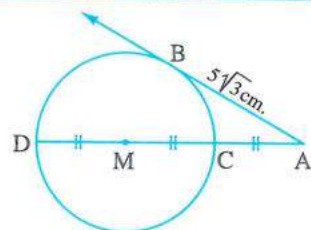
(1) In the opposite figure :

$\overline{BA}$ is a tangent to the circle M

, $AC = CM = MD$, $AB = 5\sqrt{3}$ cm.

, then area of the circle M = $\dots\dots\dots \pi \text{ cm}^2$.

- (a) 5 (b) 10 (c) 25 (d) 100



(2) If the ratio between the area of two similar polygons is 49 : 25 , then the ratio between their perimeter is $\dots\dots\dots$

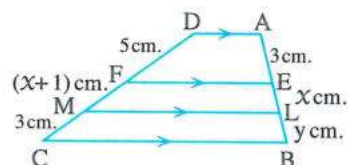
- (a) 49 : 25 (b) 7 : 5 (c) 5 : 7 (d) 25 : 49

(3) In the opposite figure :

$\overline{AD} \parallel \overline{EF} \parallel \overline{LM} \parallel \overline{BC}$

, then the value of $\frac{y}{x} = \dots\dots\dots$ cm.

- (a) 1.2 (b) 1.5
(c) 1.8 (d) 2.7

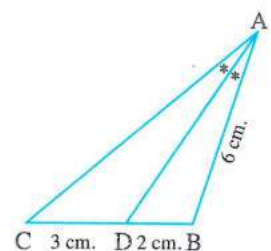


(4) In the opposite figure :

$\overline{AD}$ bisects $\angle BAC$

, then the length of $\overline{AD} = \dots\dots\dots$

- (a) $2\sqrt{3}$ (b) $3\sqrt{3}$
(c) $4\sqrt{3}$ (d) $6\sqrt{3}$



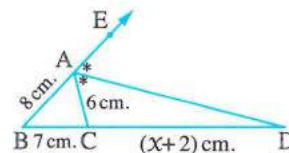
(5) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$, $AC = 6$ cm.

, $AB = 8$ cm. , $BC = 7$ cm. , $CD = x + 2$

, then the value of $x = \dots\dots\dots$ cm.

- (a) 9 (b) 19 (c) 29 (d) 39



(6) The exterior bisector of vertex angle of an equilateral triangle the base.

- (a) parallels (b) bisects (c) is perpendicular to (d) equals

(7) In any triangle the two bisector of the interior and exterior angle of the vertex of the triangle are

- (a) parallel. (b) perpendicular. (c) equal. (d) otherwise.

5 If L and M are the two roots of the equation : $x^2 - 3x - 5 = 0$, then form the equation of two roots : L + M and LM

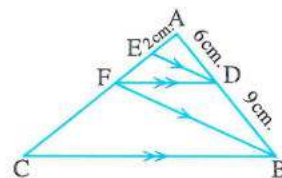
6 In the opposite figure :

In $\triangle ABC$: $\overline{FD} \parallel \overline{BC}$, $\overline{ED} \parallel \overline{BF}$

, $AD = 6$ cm. , $BD = 9$ cm. , $AE = 2$ cm.

Find the length of :

- (1) $\overline{FE}$ (2) $\overline{FC}$



15

Qena Governorate



Math General Supervision
Experimental Language School

1 Choose the correct answer from those given :

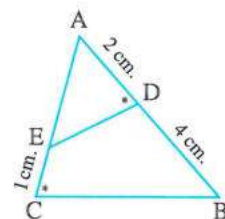
(1) $(3 + i)(3 - i) = \dots\dots\dots$

- (a) 9 (b) 8 (c) 10 (d) $3i$

(2) In the opposite figure :

$AE = \dots\dots\dots$ cm.

- (a) 5
(b) 4.5
(c) 3
(d) 4



(3) If $f : [-2, 4] \rightarrow \mathbb{R}$, where $f(x) = 2 - x$, then $f(x)$ is negative in the interval

- (a) $[2, 4]$ (b) $[2, 4[$ (c) $[-2, 2]$ (d) $[-2, 2[$

(4) The circle of diameter length 12 cm. , the length of the arc subtended by a central angle of measure $60^\circ = \dots\dots\dots$ cm.

- (a) 5π (b) 4π (c) 3π (d) 2π

(5) The solution set of the equation : $x^2 + 9 = 0$ in complex numbers is $\dots\dots\dots$

- (a) $\{3\}$ (b) $\{-3\}$ (c) $\{3i, -3i\}$ (d) $\emptyset$

(6) If $(x + 1) + (y - 2)i = 4 + 3i$, then $x + y = \dots\dots\dots$

- (a) 8 (b) 5 (c) 7 (d) 3

2 Choose the correct answer from those given :

(1) The quadratic equation whose roots are $(1 + i)$ and $(1 - i)$ is $\dots\dots\dots$

- (a) $x^2 + 2x + 2 = 0$ (b) $x^2 - 2x + 2 = 0$
 (c) $x^2 + 2x - 2 = 0$ (d) $x^2 - 2x - 2 = 0$

(2) The congruent polygons their scale factor is k , then $\dots\dots\dots$

- (a) $k < 1$ (b) $k > 1$ (c) $k = 1$ (d) $0 < k < 1$

(3) The exterior bisector of the vertex of an isosceles triangle is $\dots\dots\dots$ to the base.

- (a) parallel (b) perpendicular (c) bisector (d) equal

(4) $\sin(90^\circ - \theta) \sec \theta = \dots\dots\dots$

- (a) -1 (b) 0 (c) 1 (d) $\sqrt{3}$

(5) The maximum value of the function $f : f(x) = 3 \sin 4x$ is $\dots\dots\dots$

- (a) 3 (b) 4 (c) -3 (d) -4

(6) If $x = 3$ is one of the two roots of the equation : $x^2 - 7x + k = 0$, then $k = \dots\dots\dots$

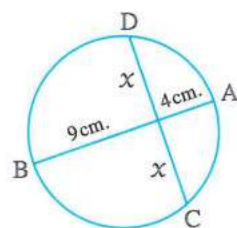
- (a) 3 (b) 4 (c) -12 (d) 12

3 Choose the correct answer from those given :

(1) In the opposite figure :

$x = \dots\dots\dots$ cm.

- (a) -6
 (b) -18
 (c) 18
 (d) 6



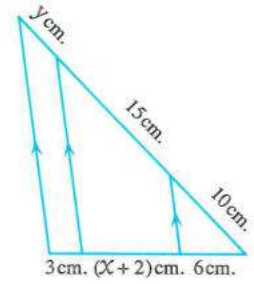
(2) If the terminal side of the angle whose measure θ drawn in the standard position intersect the unit circle at $(-\frac{3}{5}, \frac{4}{5})$, then $\cot \theta = \dots\dots\dots$

- (a) $\frac{5}{4}$ (b) $-\frac{5}{3}$ (c) $-\frac{4}{3}$ (d) -0.75

(3) In the opposite figure :

$x + y = \dots\dots\dots$ cm.

- (a) 5
- (b) 7
- (c) 11
- (d) 12



(4) If $\cos \theta = \frac{-\sqrt{3}}{2}$, $\sin \theta = \frac{1}{2}$, then $\theta = \dots\dots\dots^\circ$

- (a) 30
- (b) 150
- (c) 210
- (d) 120

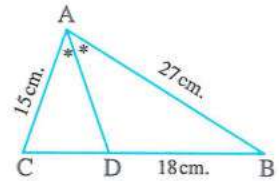
(5) If the two roots of the equation : $x^2 - 6x + L = 0$ are two equal real , then $L = \dots\dots\dots$

- (a) 9
- (b) 8
- (c) -9
- (d) -8

(6) In the opposite figure :

$AD = \dots\dots\dots$ cm.

- (a) 27
- (b) 18
- (c) 15
- (d) 20

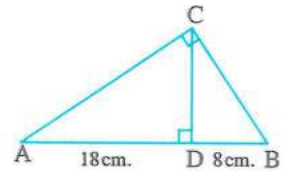


4 Choose the correct answer from those given :

(1) In the opposite figure :

$CD = \dots\dots\dots$ cm.

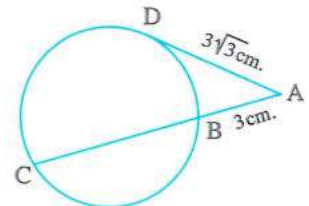
- (a) $3\sqrt{13}$
- (b) $6\sqrt{13}$
- (c) $4\sqrt{13}$
- (d) 12



(2) In the opposite figure :

$BC = \dots\dots\dots$ cm.

- (a) 9
- (b) 7
- (c) 6
- (d) 2

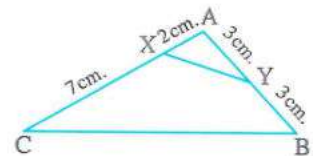


(3) In the opposite figure :

The area of triangle $ACB = 45 \text{ cm}^2$

, then the area of triangle $AXY = \dots\dots\dots \text{ cm}^2$

- (a) 22.5
- (b) 90
- (c) 5
- (d) 15



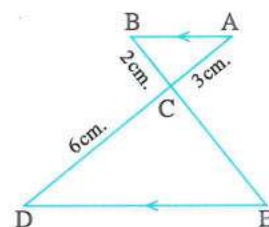
(4) The angle of measure (-15°) lies in the $\dots\dots\dots$ quadrant.

- (a) first
- (b) second
- (c) third
- (d) fourth

(5) In the opposite figure :

EC = cm.

- (a) 2
- (b) 3
- (c) 4
- (d) 10

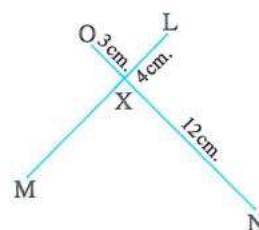


(6) The ratio between two areas of two similar polygons is $16 : 25$, length of a side in the smaller one is 4 cm. , then the length of the corresponding side in greater one is cm.

- (a) 25
- (b) 16
- (c) 5
- (d) $\frac{16}{25}$

(7) The points L , M , N and O lies on the same circle
if XM = cm.

- (a) 9
- (b) 12
- (c) 15
- (d) 20

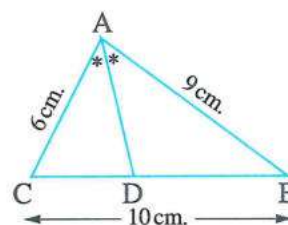


5 Find the solution set in $\mathbb{R}$ for the inequality : $x^2 - 4x - 12 > 0$

6 In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$, $AB = 9$ cm.
 , $AC = 6$ cm. , $BC = 10$ cm.

Find the length of : $\overline{BD}$ and $\overline{AD}$



Answers of School examinations

1 Cairo

1 (1) (a) (2) (b) (3) (a)

(4) (b) (5) (d) (6) (c)

2 (1) (d) (2) (c) (3) (a)

(4) (c) (5) (b) (6) (c)

3 (1) (d) (2) (b) (3) (a)

(4) (a) (5) (a) (6) (b)

4 (1) (b) (2) (b) (3) (d)

(4) (a) (5) (b) (6) (a)

(7) (c)

5

$$f(x) = x^2 - 4 = (x+2)(x-2)$$

$$f(x) = 0 \text{ at } x \in \{2, -2\}$$

$$f(x) \text{ is positive at } x \in \mathbb{R} - [-2, 2]$$

$$f(x) \text{ is negative at } x \in [-2, 2]$$

6

In $\triangle ABC$:

$\therefore \overline{CE}$ bisects $\angle ACB$

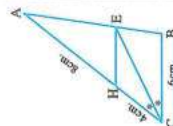
$$\therefore \frac{AE}{EB} = \frac{AC}{CB} = \frac{12}{6} = 2 \quad (1)$$

$$\therefore \frac{AH}{HC} = \frac{8}{4} = 2 \quad (2)$$

From (1) & (2):

$$\therefore \frac{AE}{EB} = \frac{AH}{HC}$$

$$\therefore \overline{EH} \parallel \overline{BC}$$



2 Cairo

1 (1) (a) (2) (a) (3) (d)

(4) (a) (5) (b) (6) (c)

2 (1) (d) (2) (d) (3) (b)

(4) (c) (5) (c) (6) (d)

3 (1) (a) (2) (b) (3) (a)

(4) (c) (5) (c) (6) (c)

4 (1) (b) (2) (b) (3) (d)

(4) (b) (5) (a) (6) (b)

(7) (b)

5

$\therefore L$ and M are the roots of the equation:

$$2x^2 - 3x - 1 = 0$$

$$\therefore L + M = \frac{3}{2}, \quad LM = -\frac{1}{2}$$

$\therefore \frac{L}{M}$ and $\frac{M}{L}$ are the roots of the required equation

$$\therefore \text{Their sum} = \frac{L}{L} + \frac{M}{M} = \frac{L^2 + M^2}{LM} = \frac{(L+M)^2 - 2LM}{LM}$$

$$= \frac{\left(\frac{3}{2}\right)^2 - 2\left(-\frac{1}{2}\right)}{\left(-\frac{1}{2}\right)} = \frac{-13}{2}$$

$$\therefore \text{their product} = \frac{L}{M} \times \frac{M}{L} = 1$$

$\therefore$ The required equation is:

$$x^2 + \frac{13}{2}x + 1 = 0 \text{ or } 2x^2 + 13x + 2 = 0$$

6

In $\triangle ABD$:

$\therefore \overline{AE}$ bisects $\angle BAD$

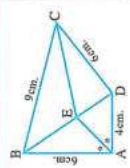
$$\therefore \frac{AB}{AD} = \frac{BE}{ED} = \frac{6}{4} = \frac{3}{2} \quad (1)$$

In $\triangle BCD$:

$$\frac{BC}{CD} = \frac{9}{6} = \frac{3}{2}$$

$$\text{From (1) & (2): } \therefore \frac{BE}{ED} = \frac{BC}{CD}$$

$\therefore \overline{CE}$ bisects $\angle BCD$



3 Cairo

1 (1) (c) (2) (a) (3) (d)

(4) (d) (5) (a) (6) (d)

2 (1) (b) (2) (c) (3) (b)

(4) (c) (5) (d) (6) (b)

3 (1) (c) (2) (a) (3) (c)

(4) (a) (5) (a) (6) (d)

4 (1) (b) (2) (c) (3) (c)

(4) (a) (5) (a) (6) (d)

(7) (d)

6

∴ L and M are the roots of the equation :

$$X^2 + 5X - 4 = 0$$

$$\therefore L + M = -5, LM = -4$$

∴ The roots of the required equation are L^2M and LM^2

$$\therefore \text{Their sum} = L^2M + LM^2 = LM(L + M)$$

$$= (-4)(-5) = 20$$

$$\therefore \text{their product} = (L^2M)(LM^2) = (LM)^3 = (-4)^3 = -64$$

$$\therefore \text{The required equation is } X^2 - 20X - 64 = 0$$

6

In $\triangle ABD$:

$$\therefore \overline{EF} \parallel \overline{BD}$$

$$\therefore \frac{AE}{EB} = \frac{AF}{FD}$$

$$\therefore \frac{6}{4} = \frac{AF}{3}$$

$$\therefore AF = 4.5 \text{ cm.}$$

In $\triangle ADC$:

$$\therefore \overline{CF} \text{ bisects } \angle ACD$$

$$\therefore \frac{AC}{CD} = \frac{AF}{FD}$$

$$\therefore \frac{AC}{6} = \frac{4.5}{3}$$

$$\therefore AC = 9 \text{ cm.}$$

4

1 (1) (b) (2) (d) (3) (d)

(4) (b) (5) (d) (6) (d)

2 (1) (a) (2) (d) (3) (b)

(4) (b) (5) (d) (6) (c)

3 (1) (c) (2) (d) (3) (a)

(4) (c) (5) (c) (6) (d)

4 (1) (a) (2) (b) (3) (c)

(4) (c) (5) (b) (6) (d)

(7) (a)

5

$$\text{Let } f(X) = X^2 - 3X - 4$$

$$\text{Put } f(X) = 0 : (X - 4)(X + 1) = 0$$

$$\therefore X = 4 \text{ or } X = -1$$

$$\therefore a > 0$$

$$\therefore \text{S.S.} = [-1, 4]$$

$$\therefore \frac{BM}{MD} = \frac{4}{6} = \frac{2}{3}, \frac{BF}{FC} = \frac{6}{9} = \frac{2}{3}$$

$$\therefore \frac{BM}{MD} = \frac{BF}{FC} \therefore \overline{FM} \parallel \overline{CD}$$

6

In $\triangle ABD$:

$$\therefore \overline{AE} \text{ bisects } \angle BAD$$

$$\therefore \frac{AB}{AD} = \frac{BE}{ED} = \frac{9}{12} = \frac{3}{4}$$

$$\therefore \frac{BF}{FC} = \frac{3}{4}$$

In $\triangle BDC$:

$$\therefore BF : FC = 3 : 4$$

From (1) and (2) :

$$\therefore \frac{BF}{FC} = \frac{BE}{ED}$$

$$\therefore \overline{FE} \parallel \overline{CD}$$

5

Giza

First Multiple choice questions

1 (1) (d) (2) (c) (3) (a)

(4) (d) (5) (d) (6) (b)

(7) (d)

2 (1) (a) (2) (c) (3) (d)

(4) (c) (5) (b) (6) (a)

3 (1) (d) (2) (d) (3) (c)

(4) (a) (5) (c) (6) (b)

4 (1) (a) (2) (d) (3) (a)

(4) (b) (5) (a) (6) (b)

5

$$\text{Put } f(X) = 0 \therefore (X - 3)(X + 2) = 0$$

$$\therefore X = 3 \text{ or } X = -2 \therefore f(X) = 0 \text{ at } X \in \{-2, 3\}$$

$$\therefore f(X) > 0 \text{ and } X \in \mathbb{R} - [-2, 3]$$

$$\therefore f(X) < 0 \text{ at } X \in [-2, 3]$$

$$\text{The solution set of } f(X) > 0 \text{ is } \mathbb{R} - [-2, 3]$$

6

In $\triangle ABC$:

$$\therefore \overline{AB} \parallel \overline{EF}$$

$$\therefore \frac{AE}{EB} = \frac{BF}{FC}$$

$$\therefore \frac{8}{12} = \frac{BF}{9}$$

$$\therefore BF = 6 \text{ cm.}$$

In $\triangle BCD$:

$$\therefore \frac{BM}{MD} = \frac{4}{6} = \frac{2}{3}, \frac{BF}{FC} = \frac{6}{9} = \frac{2}{3}$$

$$\therefore \frac{BM}{MD} = \frac{BF}{FC} \therefore \overline{FM} \parallel \overline{CD}$$

$$\therefore \overline{FM} \parallel \overline{CD}$$

$$\therefore \overline{FM} \parallel \overline{CD}$$

$$\therefore \overline{FM} \parallel \overline{CD}$$

6

Alexandria

1 (1) (a) (2) (d) (3) (a)

(4) (c) (5) (c) (6) (d)

2 (1) (b) (2) (c) (3) (d)

(4) (a) (5) (d) (6) (a)

3 (1) (c) (2) (a) (3) (b)

(4) (a) (5) (b) (6) (d)

4 (1) (c) (2) (b) (3) (d)

(4) (b) (5) (c) (6) (d)

(7) (b)

5

∴ L, L² are the roots of the equation :

$$X^2 + kX + 27 = 0 \therefore (L)(L^2) = 27$$

$$\therefore L^3 = 27$$

$$\therefore L = 3, L + L^2 = -k$$

$$\therefore (3) + (3)^2 = -k \therefore k = -12$$

6

In $\triangle ADC$:

$$\therefore \overline{DX} \text{ bisects } \angle ADC$$

$$\therefore \frac{AD}{DC} = \frac{AX}{XC}$$

$$\therefore \frac{AX}{XC} = \frac{6}{9} = \frac{2}{3} \text{ (1)}$$

$$\text{In } \triangle ABC : \frac{AE}{EB} = \frac{2}{3} \text{ (2)}$$

$$\text{From (1), (2) : } \frac{AX}{XC} = \frac{AE}{EB} \therefore \overline{XE} \parallel \overline{BC}$$

7

El-Kalyoubia

1 (1) (a) (2) (b) (3) (c)

(4) (a) (5) (c) (6) (b)

2 (1) (d) (2) (b) (3) (a)

(4) (c) (5) (c) (6) (b)

3 (1) (d) (2) (a) (3) (d)

(4) (d) (5) (d) (6) (d)

4 (1) (d) (2) (c) (3) (a)

(4) (b) (5) (c) (6) (d)

(7) (d)

5

∴ L, M are the roots of the equation :

$$X^2 - 5X + 9 = 0$$

$$\therefore L + M = 5, LM = 9$$

$$\therefore L^2, M^2 \text{ are the roots of the required equation}$$

$$\therefore \text{Their sum} = L^2 + M^2 = (L + M)^2 - 2LM$$

$$= (5)^2 - 2(9) = 7$$

$$\therefore \text{Their product} = L^2 M^2 = (LM)^2 = (9)^2 = 81$$

$$\therefore \text{The required equation is : } X^2 - 7X + 81 = 0$$

6

In $\triangle ABC$:

$$\therefore \overline{BE} \text{ bisects } \angle ABC$$

$$\therefore \frac{AB}{BC} = \frac{AE}{EC} = \frac{6}{4} = \frac{3}{2}$$

In $\triangle ADC$:

$$\therefore \frac{AD}{DC} = \frac{7.5}{5} = \frac{3}{2}$$

$$\text{From (1), (2) : } \frac{AE}{EC} = \frac{AD}{DC}$$

$$\therefore \overline{DE} \text{ bisects } \angle ADC$$

8

El-Sharkia

1 (1) (a) (2) (b) (3) (a)

(4) (d) (5) (b) (6) (d)

2 (1) (b) (2) (b) (3) (c)

(4) (d) (5) (a) (6) (a)

3 (1) (a) (2) (a) (3) (b)

(4) (d) (5) (d) (6) (b)

4 (1) (c) (2) (a) (3) (a)

(4) (d) (5) (a) (6) (a)

(7) (a)

5

$$\therefore CD \times CE = CA \times CB$$

$$\therefore 9 \times 16 = CA(CA + 10)$$

$$\therefore (CA)^2 + 10(CA) - 144 = 0$$

$$\therefore ((CA) + 18)((CA) - 8) = 0$$

$$\therefore CA = -18 \text{ refused or } CA = 8 \text{ cm.}$$

$$\therefore \overline{CF} \text{ is a tangent to circle N}$$

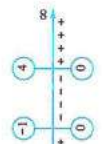
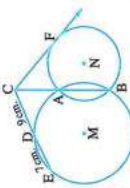
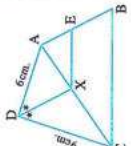
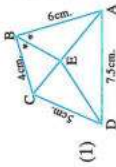
$$\therefore (CF)^2 = CA \times CB = 8 \times 18 = 144$$

$$\therefore CF = 12 \text{ cm.}$$

6

$$\text{Put } f(X) = 0 : \therefore (X - 4)(X + 3) = 0$$

$$\therefore X = 4 \text{ or } X = -3$$



$\therefore f(x) = 0$ at $x \in \{-3, 4\}$

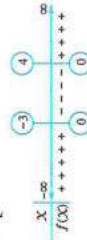
$\therefore f(x) > 0$ at $x \in \mathbb{R} - [-3, 4]$

$\therefore f(x) < 0$ at $x \in [-3, 4]$

$\therefore x^2 - 12 > x$

$\therefore x^2 - x - 12 > 0$

$\therefore \text{S.S.} = \mathbb{R} - [-3, 4]$



9 El-Monofia

1 (1) (a) (2) (b) (3) (c) (4) (d) (5) (a) (6) (a)

2 (1) (d) (2) (b) (3) (b) (4) (a) (5) (b) (6) (b)

3 (1) (a) (2) (a) (3) (b) (4) (b) (5) (c) (6) (c)

4 (1) (a) (2) (a) (3) (a) (4) (b) (5) (c) (6) (c) (7) (c)

5

$\therefore L, M$ are the roots of the equation :

$x^2 - 5x + 7 = 0$

$\therefore L + M = 5, LM = 7$

$\therefore L^2, M^2$ are the roots of the required equation

$\therefore \text{Their sum} = L^2 + M^2 = (L + M)^2 - 2LM$

$= (5)^2 - 2(7) = 11$

$\therefore \text{Their product} = L^2 M^2 = (LM)^2 = (7)^2 = 49$

$\therefore \text{The required equation} : x^2 - 11x + 49 = 0$

6

In $\triangle ABC$:

$\therefore EM \parallel BC$

$\therefore AM = MC$

$\therefore AE = EB$

$\therefore 2x = x + 5$

$\therefore x = 5$

In $\triangle ADC$

$\therefore \overline{MN} \parallel \overline{AD}, AM = MC$

$\therefore DN = NC$

$\therefore x + 4 = 3y$

$\therefore 3y = 9$

10 Dakahlia

1 (1) (b) (2) (b) (3) (a) (4) (b) (5) (b) (6) (b)

2 (1) (b) (2) (c) (3) (b) (4) (d) (5) (c) (6) (c)

3 (1) (b) (2) (b) (3) (c) (4) (c) (5) (d) (6) (a)

4 (1) (d) (2) (d) (3) (d) (4) (a) (5) (a) (6) (a)

5

$\therefore (x-1)(x-2) \leq 6$

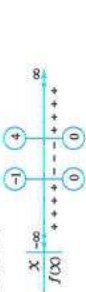
$\therefore x^2 - 3x - 4 \leq 0$

$\therefore (x-4)(x+1) \leq 0$

Let $f(x) = (x-4)(x+1)$

Put $f(x) = 0$

$\therefore x = 4$ or $x = -1$



$\therefore \text{S.S.} = [-1, 4]$

6

In $\triangle ABC$:

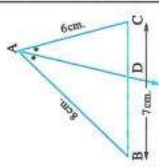
$\therefore AD$ bisects $\angle BAC$

$\therefore \frac{AB}{AC} = \frac{BD}{DC}$

$\therefore \frac{8}{6} = \frac{7-BD}{BD}$

$\therefore 56 - 8BD = 6BD$

$\therefore BD = 4 \text{ cm.} \therefore DC = 7 - 4 = 3 \text{ cm.}$



11 Ismailia

1 (1) (c) (2) (d) (3) (a) (4) (a) (5) (b) (6) (a)

2 (1) (c) (2) (d) (3) (a) (4) (d) (5) (a) (6) (b)

3 (1) (c) (2) (b) (3) (c) (4) (d) (5) (c) (6) (b)

4 (1) (d) (2) (c) (3) (b) (4) (d) (5) (a) (6) (c) (7) (a)

5

$\therefore x^2 - 5x - 14 = 0$

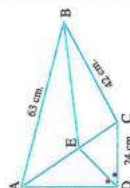
$\therefore x = 7$ or $x = -2$

$\therefore$ The roots of the required equation are 8, -1

Their sum $= 8 + (-1) = 7$

$\therefore$ Their product $= 8(-1) = -8$

The required equation is : $x^2 - 7x - 8 = 0$



In $\triangle ADC$:

$\therefore DE$ bisects $\angle ADC$

$\therefore \frac{AD}{DC} = \frac{AE}{EC}$

$\therefore \frac{6}{24} = \frac{3}{EC}$ (1)

In $\triangle ABC$:

$\therefore \frac{AB}{BC} = \frac{3}{4}$ (2)

From (1), (2) : $\frac{AE}{EC} = \frac{AB}{BC}$

$\therefore BE$ bisects $\angle ABC$

12 Kafr El-Sheikh

1 (1) (b) (2) (d) (3) (c) (4) (c) (5) (d) (6) (a)

2 (1) (b) (2) (c) (3) (d) (4) (c) (5) (a) (6) (b)

3 (1) (a) (2) (b) (3) (b) (4) (a) (5) (b) (6) (a)

4 (1) (b) (2) (d) (3) (d) (4) (d) (5) (a) (6) (c) (7) (b)

5

$\therefore x^2 - 4x - 5 = 0$

$\therefore x = 5$ or $x = -1$

$\therefore L > M$

are the roots of the required equation

$\therefore$ Their sum $= (11) + (2) = 13$

$\therefore 2L - M = 11, L + 3M = 2 \therefore 11 + 2$

$\therefore$ their product $= (11)(2) = 22$

$\therefore$ The required equation is : $x^2 - 13x + 22 = 0$

6

In $\triangle ABC$:

$\therefore \overline{AE}$ is exterior bisector of $\angle B$

$\therefore \angle A, \overline{AD} \perp \overline{AE}$

$\therefore \overline{AD}$ is interior bisector of $\angle A$

$\therefore \frac{AB}{AC} = \frac{BD}{DC}$

$\therefore \frac{18}{AC} = \frac{9}{6}$

$\therefore AC = 12 \text{ cm.}$

$\therefore AE = \sqrt{BE \times EC - BA \times AC}$

$= \sqrt{45 \times 30 - 18 \times 12} = 9\sqrt{14} \text{ cm.}$

13 El-Beheira

1 (1) (a) (2) (d) (3) (b) (4) (b) (5) (d) (6) (b)

2 (1) (c) (2) (a) (3) (a) (4) (a) (5) (d) (6) (a)

3 (1) (c) (2) (d) (3) (b) (4) (d) (5) (c) (6) (b)

4 (1) (d) (2) (c) (3) (c) (4) (c) (5) (c) (6) (d) (7) (d)

5

In $\triangle ABC$

$\therefore \overline{AD}$ bisects $\angle BAC$

$\therefore \frac{AB}{AC} = \frac{BD}{DC}$

$\therefore \frac{3}{5} = \frac{12}{DC}$

$\therefore DC = 20 \text{ cm.}$

Let $AB = 3x, AC = 5x$

$\therefore (5x)^2 = (3x)^2 + (32)^2$

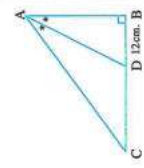
$\therefore 25x^2 = 9x^2 + 1024$

$\therefore 16x^2 = 1024$

$\therefore x = 8$

$\therefore AB = 3 \times 8 = 24 \text{ cm.} \therefore AC = 5 \times 8 = 40 \text{ cm.}$

$\therefore$ The perimeter $= 24 + 40 + 32 = 96 \text{ cm.}$



6

$$\therefore b^2 - 4ac = (2)^2 - 4(1)(3) = -8$$

$\therefore f(x)$ has no real roots

$\therefore a > 0$

$$\therefore f(x) > 0 \text{ for all } x \in [-2, 4]$$

The S.S. of $f(x) \leq 0$ is $\emptyset$

14 El-Menia

1 (1) (b) (2) (d) (3) (a)

(4) (a) (5) (b) (6) (b)

2 (1) (c) (2) (d) (3) (a)

(4) (d) (5) (a) (6) (c)

3 (1) (a) (2) (b) (3) (c)

(4) (c) (5) (b) (6) (c)

4 (1) (c) (2) (b) (3) (a)

(4) (c) (5) (b) (6) (a)

(7) (b)

5

$\therefore L, M$ are the roots of the equation : $x^2 - 3x + 5 = 0$

$$\therefore L + M = 3, LM = 5$$

$\therefore L + M, LM$ are the roots of the required equation

$$\therefore \text{Their sum} = (L + M) + (LM) = 3 + 5 = 8$$

$$\therefore \text{their product} = (L + M)(LM) = (3)(5) = 15$$

$$\therefore \text{The required equation is : } x^2 - 8x + 15 = 0$$

6

In $\triangle ABF$:

$$\therefore \overline{DE} \parallel \overline{BF}$$

$$\therefore \frac{AD}{DB} = \frac{AE}{EF}$$

$$\therefore \frac{6}{9} = \frac{2}{EF}$$

$$\therefore EF = 3 \text{ cm.}$$

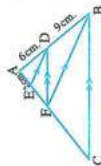
In $\triangle ABC$:

$$\therefore \overline{DF} \parallel \overline{BC}$$

$$\therefore \frac{AD}{DB} = \frac{AF}{FC}$$

$$\therefore \frac{6}{9} = \frac{5}{FC}$$

$$\therefore FC = 7.5 \text{ cm.}$$



15 Qena

1 (1) (c) (2) (c) (3) (a)

(4) (d) (5) (c) (6) (a)

2 (1) (b) (2) (c) (3) (a)

(4) (c) (5) (a) (6) (d)

3 (1) (d) (2) (d) (3) (d)

(4) (b) (5) (a) (6) (c)

4 (1) (d) (2) (c) (3) (c)

(4) (d) (5) (c) (6) (c)

(7) (a)

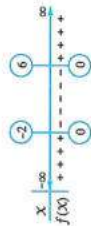
5

$$\text{Let } f(x) = x^2 - 4x - 12$$

$$\text{Put } f(x) = 0, (x-6)(x+2) = 0$$

$$\therefore x = 6 \text{ or } x = -2$$

$$\therefore a > 0$$



$\therefore$ The S.S. of $f(x) > 0$ is $\mathbb{R} - [-2, 6]$

6

In $\triangle ABC$

$$\therefore \overline{AD} \text{ bisects } \angle BAC$$

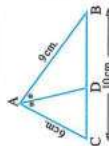
$$\therefore \frac{AB}{AC} = \frac{BD}{DC}$$

$$\therefore \frac{9}{6} = \frac{BD}{10 - BD}$$

$$\therefore 90 - 9BD = 6BD$$

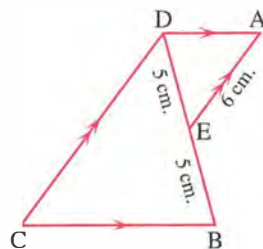
$$\therefore BD = 6$$

$$\therefore AD = \sqrt{9 \times 6 - 6 \times 4} = \sqrt{30} \text{ cm.}$$

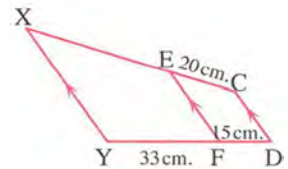
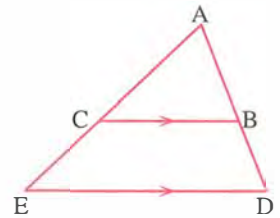


**First Multiple choice questions**Interactive
tests ①**Choose the correct answer from those given :**

- (1) The conjugate of the number : $3i - 5$ is
- (a) $3i + 5$ (b) $-(3i + 5)$ (c) $5 - 3i$ (d) $-(5 - 3i)$
- (2) The angle whose measure : -120° lies in the quadrant.
- (a) first (b) second (c) third (d) fourth
- (3) If the polygon M_1 is enlargement of polygon M_2 , and K is the scale factor, then
- (a) $K > 1$ (b) $K < 1$ (c) $K = 0$ (d) $0 < K < 1$
- (4) All are similar.
- (a) triangles (b) rectangles
(c) squares (d) parallelograms
- (5) If $x = 2$, is one root of the equation : $x^2 - kx - 6 = 0$, then $k = \dots\dots\dots$
- (a) 1 (b) -1 (c) 2 (d) zero
- (6) If the length of the radius of the circle $\odot M$ is 9 cm. , $AM = 12$ cm. , then $P_M(A) = \dots\dots\dots$
- (a) 144 (b) 81 (c) 63 (d) 225
- (7) The solution set of the inequality : $x^2 + 3x - 4 \geq 0$ in $\mathbb{R}$ is
- (a) $\{-4, 1\}$ (b) $[-4, 1]$
(c) $\mathbb{R} -]-4, 1[$ (d) $\mathbb{R} - [-4, 1]$
- (8) In the opposite figure :
- DC = cm.
- (a) 6
(b) 9
(c) 12
(d) 15
- (9) The quadratic equation whose roots are $\frac{3}{2}i$, $\frac{3}{2}i^3$ is
- (a) $4x^2 - 9 = 0$ (b) $4x^2 + 9 = 0$
(c) $9x^2 - 4 = 0$ (d) $9x^2 + 4 = 0$



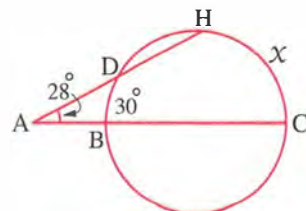
- (10) The length of the arc in a circle, its radius length is 6 cm., and its central angle of measure 60° , equals cm.
 (a) 5π (b) 4π (c) 3π (d) 2π
- (11) The internal bisector of vertex angle of a triangle is the external bisector of it.
 (a) parallel to (b) equal to
 (c) perpendicular to (d) coincident with
- (12) Which measure of the following angles whose sine and cosine are negative together?
 (a) 30° (b) 120° (c) 220° (d) 320°
- (13) If two similar polygons, the ratio between their perimeters = $4 : 9$, then the ratio between their areas =
 (a) $4 : 9$ (b) $9 : 4$ (c) $2 : 3$ (d) $16 : 81$
- (14) If $\sin(2X + 15^\circ) = \cos(3X + 25^\circ)$, where $X \in]0, \frac{\pi}{4}[$, then the value of $X =$
 (a) 10° (b) 50° (c) 25° (d) 30°
- (15) If the product of roots of the equation : $X^2 - 3X + k = 0$ is 1, then $k =$
 (a) -2 (b) -1 (c) 1 (d) 2
- (16) In the opposite figure :
 If $\overline{BC} \parallel \overline{DE}$, then
 (a) BCED is cyclic quadrilateral.
 (b) $\triangle ABC \sim \triangle ADE$
 (c) $AB \times AD = AC \times AE$
 (d) $AB : BD = BC : DE$
- (17) In the opposite figure :
 Length of $\overline{XC} =$ cm.
 (a) 48 (b) 64
 (c) 44 (d) 21
- (18) $\tan X + \tan(180^\circ - X) =$
 (a) 0 (b) 1 (c) -1 (d) $2 \tan X$
- (19) If two similar rectangles, their widths are 6 cm., 3 cm. respectively, then the ratio between their perimeters = respectively.
 (a) $2 : 3$ (b) $3 : 2$ (c) $1 : 2$ (d) $2 : 1$
- (20) If the roots of the equation : $X^2 + 4X + k = 0$, are different and real, then $k \in$
 (a) $]-\infty, 4[$ (b) $]4, \infty[$ (c) $]-\infty, 4]$ (d) $\{4\}$



(21) In the opposite figure :

$x = \dots\dots\dots$

- (a) 30° (b) 60°
(c) 86° (d) 26°



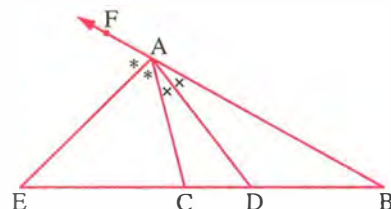
(22) If $2 + 3i + (1 - i) = x + iy$, then $x + y = \dots\dots\dots$

- (a) 2 (b) -4 (c) 5 (d) 7

(23) Using the opposite figure :

The false statement of the following is $\dots\dots\dots$

- (a) $\frac{BA}{AC} = \frac{BD}{DC}$ (b) $\frac{BA}{AC} = \frac{BE}{EC}$
(c) $\frac{CA}{AB} = \frac{DA}{AE}$ (d) $\angle DAE$ is right.



(24) The sign of the function $f(x) = x - 2$ is negative if $\dots\dots\dots$

- (a) $x > 2$ (b) $x \geq 2$ (c) $x \leq 2$ (d) $x < 2$

(25) If $13 \sin(90^\circ - \theta) = 5$, then $\cos \theta = \dots\dots\dots$

- (a) $\frac{12}{13}$ (b) $\frac{5}{13}$ (c) $-\frac{12}{13}$ (d) $-\frac{5}{13}$

(26) The triangle in which two angles of measures 60° , 75° is similar to the triangle in which two angles of measures 45° , $\dots\dots\dots$

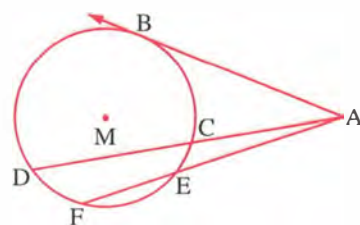
- (a) 30° (b) 55° (c) 75° (d) 100°

(27) In the opposite figure :

If $\overrightarrow{AB}$ is a tangent to the circle M

, then $(AB)^2 = \dots\dots\dots$

- (a) $AC \times CD$ (b) $AE \times EF$
(c) $P_M(A)$ (d) $\frac{AC}{AD}$



Second

Essay questions

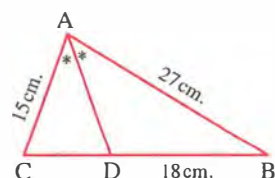
Answer the following questions :

1 Find the solution set in $\mathbb{R}$ for the inequality : $x^2 + 5x - 6 \geq 0$

2 In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$

Calculate the length of : $\overline{AD}$



2

Cairo Governorate



El-Zaitoun Directorate
Mathematics Supervision

First Multiple choice questions



Interactive
tests ②

Choose the correct answer from those given :

- (1) Number of roots of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is
- (a) 2 (b) 1 (c) 3 (d) zero
- (2) If $\Delta ABC \sim \Delta DEF$, $BC = 3 EF$, then the scale factor of similarity of the two triangles =
- (a) $\frac{2}{3}$ (b) $\frac{1}{2}$ (c) 1 (d) 3
- (3) The angle of measure 585° in standard position is equivalent to the angle of measure
- (a) 45° (b) 135° (c) 225° (d) 315°
- (4) The simplest form of imaginary number i^{45} is
- (a) -1 (b) 1 (c) $-i$ (d) i
- (5) Two angles of a triangle with measures 50° , 70° similar to another triangle with angles of measures 50° and°
- (a) 60 (b) 80 (c) 55 (d) 40
- (6) The ratio between two corresponding sides of two similar squares is $3 : 4$, if the area of the greater square is 48 cm^2 , then the area of smaller one = cm^2
- (a) 16 (b) 12 (c) 20 (d) 27
- (7) The conjugate of the number (-8) is
- (a) $8i$ (b) $-8i$ (c) -8 (d) 8
- (8) If the two roots of the equation : $3x^2 - 6x + k = 0$ are equal real , then $k = \dots\dots\dots$
- (a) 2 (b) 3 (c) 6 (d) 9
- (9) If M is a circle of radius length 3 cm. , A is a point lies in its plane where $MA = 4$ cm. , then $P_M(A) = \dots\dots\dots$
- (a) $\sqrt{7}$ (b) 9 (c) 7 (d) -7
- (10) The angle of measure $\frac{9\pi}{4}$ lies in the quadrant.
- (a) first (b) second (c) third (d) fourth
- (11) Two similar polygons , the length of two corresponding sides are 7 cm. , 11 cm. , then the ratio between their two perimeters is
- (a) $\frac{49}{121}$ (b) $\frac{7}{18}$ (c) $\frac{7}{11}$ (d) $\frac{11}{18}$

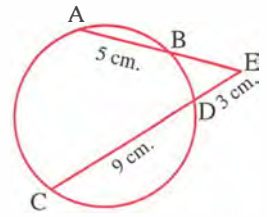
(12) If $\cos \theta = \frac{1}{2}$, $\sin \theta = \frac{\sqrt{3}}{2}$, then the measure of angle $\theta = \dots\dots\dots$

- (a) $\frac{\pi}{3}$ (b) $\frac{5\pi}{6}$ (c) $\frac{5\pi}{3}$ (d) $\frac{11\pi}{6}$

(13) In the opposite figure :

BE = cm.

- (a) 6 (b) 5
(c) 4 (d) 3



(14) The sum of the two roots of the equation : $5x^2 - 3 = 0$ is

- (a) $\frac{3}{5}$ (b) $-\frac{3}{5}$ (c) zero (d) $\frac{5}{3}$

(15) If one of the two roots of the equation : $3x^2 - (b-3)x + 5 = 0$ is the additive inverse of the other, then b = cm.

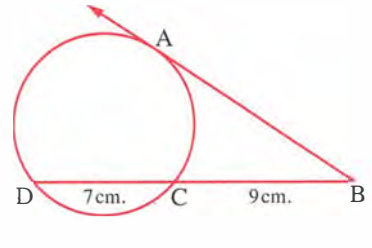
- (a) -5 (b) -3 (c) 3 (d) 5

(16) In the opposite figure :

$\overrightarrow{BA}$ is a tangent, BC = 9 cm., CD = 7 cm.

, then AB = cm.

- (a) 63 (b) 144
(c) 12 (d) $\frac{9}{16}$



(17) If M is a circle, A is a point lies in its plane where $P_M(A) = 0$, then A lies

- (a) inside the circle. (b) on the centre of the circle.
(c) outside the circle. (d) on the circle.

(18) If X is the measure of one angle in right-angled triangle, $\sin X = \frac{4}{5}$, then $\cos (90^\circ - X) = \dots\dots\dots$

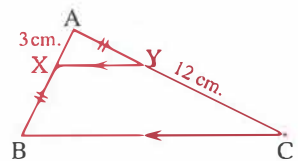
- (a) $\frac{3}{5}$ (b) $-\frac{3}{5}$ (c) $-\frac{4}{5}$ (d) $\frac{4}{5}$

(19) In the opposite figure :

If $\overline{XY} \parallel \overline{BC}$

, then AC = cm.

- (a) 15 (b) 16
(c) 18 (d) 20



(20) The two similar polygons are congruent if the scale factor K satisfies

- (a) $K = \frac{1}{2}$ (b) $K = 1$ (c) $K > 1$ (d) $0 < K < 1$

(21) The quadratic equation whose roots are $-2i$ and $2i$ is

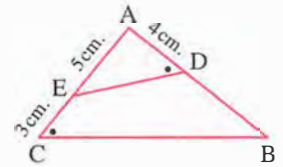
- (a) $x^2 = 4i$ (b) $x^2 + 4 = 0$
(c) $x^2 - 4 = 0$ (d) $ix^2 + 4 = 0$

- (22) If L, M are the two roots of the equation : $x^2 - 7x + 3 = 0$, then the value of the expression : $L^2 M + L M^2 = \dots\dots\dots$
- (a) 7 (b) 3 (c) 10 (d) 21
- (23) Two similar polygons , the ratio between their perimeters equal $4 : 9$, then the ratio between the lengths of two corresponding sides is $\dots\dots\dots$
- (a) $4 : 9$ (b) $2 : 3$ (c) $16 : 81$ (d) $9 : 4$

(24) In the opposite figure :

$BD = \dots\dots\dots$ cm.

- (a) 5 (b) 6
(c) 4 (d) 7



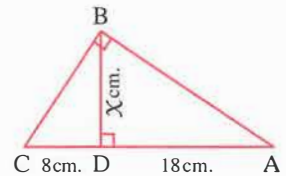
(25) If $XYZL$ is a cyclic quadrilateral , $\cos X = \frac{1}{2}$, then $\sin (270^\circ - Z) = \dots\dots\dots$

- (a) $\frac{\sqrt{3}}{2}$ (b) $-\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

(26) In the opposite figure :

$x = \dots\dots\dots$ cm.

- (a) $12\sqrt{3}$ (b) 24
(c) 12 (d) $8\sqrt{3}$



(27) The S.S. of the inequality $(x - 1)^2 \leq 0$ in $\mathbb{R}$ is $\dots\dots\dots$

- (a) $\mathbb{R}$ (b) $\emptyset$ (c) $\{1\}$ (d) $\mathbb{R} - \{1\}$

Second Essay questions

Answer the following questions :

1 Determine the sign of the function , then represent your answer on number line :

$$f(x) = x^2 + 2x - 3$$

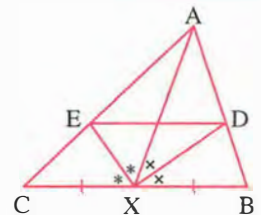
2 In the opposite figure :

ABC is a triangle X is midpoint of $\overline{BC}$

, $\overrightarrow{XE}$ bisect $\angle AXC$

, $\overrightarrow{XD}$ bisect $\angle AXB$

Prove that : $\overline{ED} \parallel \overline{CB}$





First Multiple choice questions



Interactive
tests ③

Choose the correct answer from those given :

(1) If $4 \cos \theta = 3$ where θ is an acute angle , then $\tan (-\theta) = \dots\dots\dots$

- (a) $\frac{3}{4}$ (b) $\frac{-\sqrt{7}}{4}$ (c) $\frac{-3}{4}$ (d) $\frac{-\sqrt{7}}{3}$

(2) The length of the arc of a circle its diameter length 24 cm. and opposite to a central angle its measure 60° is $\dots\dots\dots$

- (a) 2π (b) 3π (c) 4π (d) 8π

(3) If the two roots of the equation : $X^2 - 4X + k - 2 = 0$ are equal , then $k = \dots\dots\dots$

- (a) 5 (b) 6 (c) 4 (d) 8

(4) The conjugate of the number $3i + 5$ is $\dots\dots\dots$

- (a) $3i + 5$ (b) $3i - 5$ (c) $-3i - 5$ (d) $5 - 3i$

(5) The solution set of : $5 - 4X \geq X^2$ in $\mathbb{R}$ is $\dots\dots\dots$

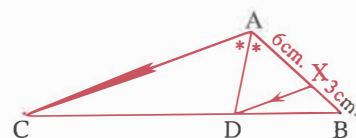
- (a) $[-5, 1]$ (b) $] -5, 1[$
(c) $\mathbb{R} -] -5, 1[$ (d) $\mathbb{R} - [-5, 1]$

(6) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle A$, $\overline{DX} \parallel \overline{AC}$

, then $AC = \dots\dots\dots$ cm.

- (a) 12 (b) 18
(c) 8 (d) 15



(7) If $\tan (3\theta - 70^\circ) \times \tan \theta = 1$ where $\theta \in]0, \frac{\pi}{3}[$, then $\sin (2\theta + 10) = \dots\dots\dots$

- (a) 1 (b) -1 (c) zero (d) $\emptyset$

(8) If L is one of the two roots of the equation : $X^2 - 3X + 1 = 0$, then $3L - L^2 + 5 = \dots\dots\dots$

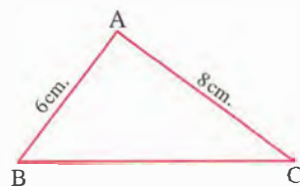
- (a) 1 (b) 6 (c) 4 (d) -6

(9) In the opposite figure :

$m(\angle A) = 2m(\angle B)$

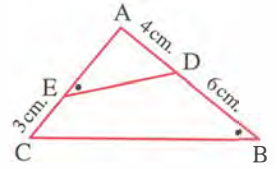
, then $BC = \dots\dots\dots$ cm.

- (a) $3\sqrt{3}$ (b) $2\sqrt{21}$
(c) $4\sqrt{7}$ (d) 10



(10) In the opposite figure :

$m(\angle AED) = m(\angle B)$, $AD = 4$ cm.
 , $DB = 6$ cm. , $CE = 3$ cm.
 , then $AE = \dots\dots\dots$ cm.



- (a) 3 (b) 4 (c) 5 (d) 6

(11) The sign of function $f(x) = 8 - 2x$ is positive when

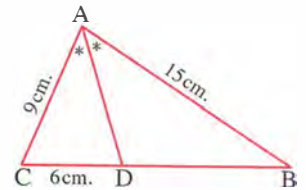
- (a) $x > 4$ (b) $x < 4$ (c) $x \geq 4$ (d) $x \leq 4$

(12) Two similar triangles , the area of the first 50 cm^2 , the area of the second 32 cm^2 and the perimeter of the smaller is 16 cm. , then the perimeter of the greater =

- (a) 25 (b) 30 (c) 15 (d) 20

(13) In the opposite figure :

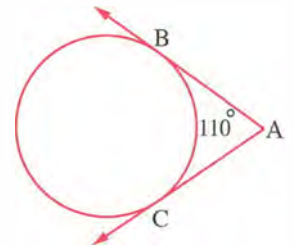
$AB = 15$ cm. , $AC = 9$ cm. , $DC = 6$ cm.
 and $\overrightarrow{AD}$ bisect $(\angle BAC)$
 , then $AD = \dots\dots\dots$ cm.



- (a) $5\sqrt{5}$ (b) $3\sqrt{5}$ (c) 13.5 (d) $5\sqrt{3}$

(14) In the opposite figure :

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents of the circle
 , $m(\widehat{BC}) = 110^\circ$
 , then $m(\angle A) = \dots\dots\dots$



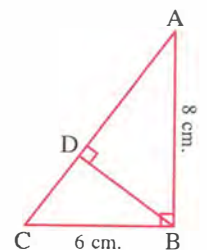
- (a) 70° (b) 55°
 (c) 60° (d) 75°

(15) M is circle its radius length is 3 cm. , A is a point outside it where $AM = 4$ cm. , then $P_M(A) = \dots\dots\dots$

- (a) 5 (b) 7 (c) 25 (d) 1

(16) In the opposite figure :

ΔABC is right-angled triangle at B
 , $\overline{BD} \perp \overline{AC}$
 , then $AD = \dots\dots\dots$ cm.



- (a) 5 (b) 3.6
 (c) 6.4 (d) $5\frac{5}{7}$

(17) If $\Delta ABC \sim \Delta XYZ$, $m(\angle A) = 60^\circ$, $m(\angle Y) = 70^\circ$, then $m(\angle C) = \dots\dots\dots^\circ$

- (a) 120 (b) 50 (c) 70 (d) 110

(18) $\tan (135^\circ) \sec (240^\circ) = \dots\dots\dots$ in simplest form.

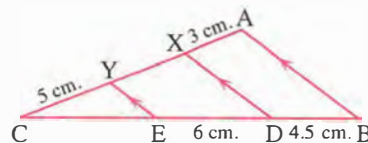
- (a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) -2 (d) 2

(19) In the opposite figure :

$$\overline{AB} \parallel \overline{XD} \parallel \overline{YE}$$

, then $XY + EC = \dots\dots\dots$ cm.

- (a) 11.5 (b) 10
(c) 11 (d) 12



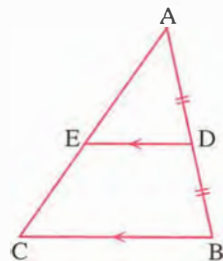
(20) In the opposite figure :

If D is the midpoint of $\overline{AB}$

, area of $\Delta ADE = 16 \text{ cm}^2$

, then the area of $\Delta ABC = \dots\dots\dots \text{ cm}^2$

- (a) 32 (b) 48
(c) 64 (d) 50



(21) The maximum value of the function : $f(x) = 1 - 3 \cos 2x$ is $\dots\dots\dots$

- (a) 3 (b) -2 (c) 4 (d) 2

(22) In the opposite figure :

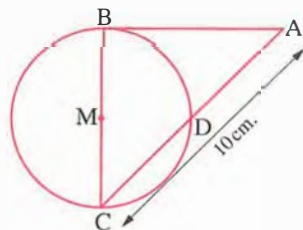
$\overline{AB}$ is a tangent of the circle at B

, $\overline{BC}$ is the diameter , $BC = 8 \text{ cm}$.

, $AC = 10 \text{ cm}$.

, then the length of $\overline{AD} = \dots\dots\dots \text{ cm}$.

- (a) 3.6 (b) 6.4 (c) 4.8 (d) 5



(23) The equation which its two roots are : $1 + i$, $1 + i^3$, where $i^2 = -1$ is $\dots\dots\dots$

- (a) $x^2 + 2x + 2 = 0$ (b) $x^2 - 2x + 2 = 0$
(c) $x^2 + 2x - 2 = 0$ (d) $x^2 - 2x - 2 = 0$

(24) If $\frac{2}{L}$, $\frac{2}{M}$ are the two roots of the equation : $4x^2 - 3x - 2 = 0$, then $L + M = \dots\dots\dots$

- (a) -3 (b) 3 (c) -8 (d) $-\frac{3}{4}$

(25) The simplest form of $\sin (270^\circ - \theta) + \cos (360^\circ - \theta) = \dots\dots\dots$

- (a) $2 \cos \theta$ (b) $-2 \cos \theta$ (c) -1 (d) zero

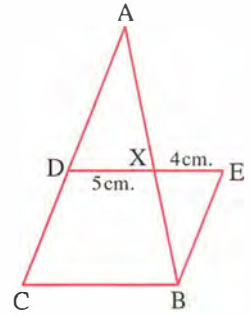
(26) The angle which its measure is $-\frac{8\pi}{3}$ lies in the $\dots\dots\dots$ quadrant.

- (a) first (b) second (c) third (d) fourth

(27) In the opposite figure :

EBCD is a rhombus such that :
 $EX = 4$ cm. , $XD = 5$ cm.
 , then the length of $\overline{AD} = \dots\dots\dots$ cm.

- (a) 9 (b) 10.5
 (c) 11.25 (d) 14

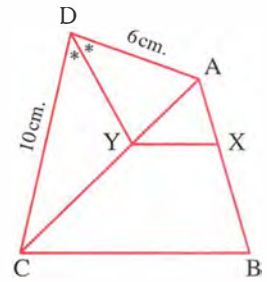


Second Essay questions

Answer the following questions :

1 In the opposite figure :

$\overrightarrow{DY}$ bisects $\angle ADC$
 and $AX : XB = 3 : 5$
Prove that : $\overline{XY} \parallel \overline{BC}$



- 2** Determine the sign of the function $f(x) = x^2 - 10x + 21$, then find in $\mathbb{R}$ the solution set of the inequality $f(x) < \text{zero}$

4

Giza Governorate



**Awsseem Educational Directorate
 Mathematics Inspection**

First Multiple choice questions

Choose the correct answer from those given :

- (1)** If $x = 2 - 3i$, $y = -1 + 3i$, then the value of the expression :
 $x^2 + 2xy + y^2 = \dots\dots\dots$
 (a) 9 (b) -1 (c) 1 (d) 5
- (2)** If the two roots of the equation : $x^2 - 4x + 3 + \frac{1}{m} = 0$ are equal , then $m = \dots\dots\dots$
 (a) 3 (b) 1 (c) 4 (d) $\frac{4}{3}$
- (3)** If one root of the equation : $(x - k)^2 - 6x = 0$ is the additive inverse of the other , then $k = \dots\dots\dots$
 (a) -3 (b) 6 (c) -6 (d) 9
- (4)** If L is one root of the equation : $x^2 - 3x + 5 = 0$, then the value of the expression :
 $2L^2 - 6L + 15 = \dots\dots\dots$
 (a) 3 (b) 5 (c) 15 (d) 10



**Interactive
 tests ④**

- (5) If L, M are the two roots of the equation : $(X - a)(X - b) = k$, then the equation whose roots are a, b is
- (a) $(X - L)(X - M) = 0$ (b) $(X - L)(X - M) + k = 0$
 (c) $X^2 - (L + M)X + k = 0$ (d) $(X - L)(X - M) = k$
- (6) If the S.S. of the inequality : $X^2 - 4 \leq X + k$ is $[-2, 3]$, then $k = \dots\dots\dots$
- (a) -6 (b) 1 (c) 2 (d) 10
- (7) If $f(X) = X - 2$, $g(X) = X^2 - 5X - 6$, then the two functions are positive together at the same time in the interval
- (a) $]6, \infty[$ (b) $]2, 6[$ (c) $]-2, -\infty[$ (d) $[2, 6]$
- (8) If L, M are the two roots of the equation : $X^2 - 5X + 7 = 0$, then the value of the expression : $L^2M + LM^2 = \dots\dots\dots$
- (a) 25 (b) 12 (c) 35 (d) 40
- (9) The radian and degree measure of the central angle opposite to an arc of length 3 cm. in a circle of surface area $16\pi \text{ cm}^2$ equals
- (a) 1^{rad} and 180° (b) 1.5^{rad} and 86°
 (c) 0.75^{rad} and 90° (d) 0.75^{rad} and $42^\circ 58'$
- (10) If $(10X - 15)^\circ$ is the smallest positive measure, $(10Y - 15)^\circ$ is the greatest negative measure of two equivalent angles, then $X - Y = \dots\dots\dots$
- (a) 36 (b) 120 (c) 90 (d) 60
- (11) If $10 \sin \theta = 6$ where θ is the measure of the greatest positive angle, then the numerical value of the expression : $\sec(540^\circ + \theta) = \dots\dots\dots$
- (a) $\frac{3}{5}$ (b) $-\frac{5}{4}$ (c) $\frac{5}{4}$ (d) $-\frac{3}{5}$
- (12) If $\tan(180^\circ + 5\theta) + \tan(270^\circ + 4\theta) = 0$, then one value of θ which satisfy the equation where $\theta \in]0, 90^\circ[$ equals
- (a) 5 (b) 10 (c) 20 (d) 90
- (13) If $f(\theta) = 2 \sin 4\theta$ is a periodic function and its period equals
- (a) 2π (b) π (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{4}$
- (14) If $\sin \theta = \frac{4}{5}$ where θ is the greatest positive angle, then the value of the expression : $\sin(180^\circ - \theta) + \tan(360^\circ - \theta) + 2 \sin(270^\circ - \theta) = \dots\dots\dots$
- (a) $\frac{41}{15}$ (b) $\frac{13}{5}$ (c) $\frac{10}{3}$ (d) 15
- (15) The ratio between the lengths of two corresponding sides in two similar polygons is $2 : 3$ if the perimeter of the smaller is 14 cm., then the perimeter of the greater = cm.
- (a) 14 (b) 15 (c) 21 (d) 28

(16) A is a point in the plane of circle M, $MA = 6$ cm., $P_M(A) = -13$, then the surface area of the circle = cm^2 , (where $\pi = \frac{22}{7}$)

- (a) 7 (b) 44 (c) 154 (d) 144

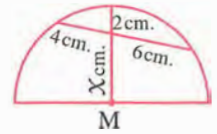
(17) The sum of areas of two similar polygons is 250 cm^2 and the ratio between their perimeters is $4 : 3$, then the surface area of the greater polygon = cm^2

- (a) 160 (b) 144 (c) 150 (d) 155

(18) In the opposite figure :

A semicircle of centre M
 , then $X = \dots\dots\dots \text{cm}$.

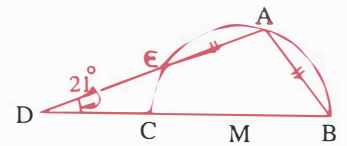
- (a) 5 (b) 7 (c) 8 (d) 12



(19) In the opposite figure :

If $AE = AB$, $\overline{BC}$ is a diameter, $m(\angle D) = 21^\circ$
 , then $m(\angle A) = \dots\dots\dots$

- (a) 100° (b) 104° (c) 106° (d) 110°



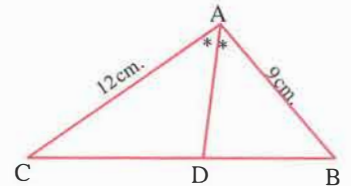
(20) $\triangle ABC \sim \triangle DEF$, area of $(\triangle ABC) = 4$ area of $(\triangle DEF)$ and if $DE = 6$ cm.
 , then $AB = \dots\dots\dots$

- (a) 3 (b) 24 (c) 12 (d) 8

(21) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$
 , then $\frac{\text{area of } (\triangle ABD)}{\text{area of } (\triangle ADC)} = \dots\dots\dots$

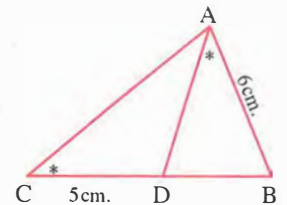
- (a) $3 : 7$ (b) $3 : 4$ (c) $81 : 144$ (d) $9 : 49$



(22) In the opposite figure :

$m(\angle BAD) = m(\angle C)$
 , then $BD = \dots\dots\dots \text{cm}$.

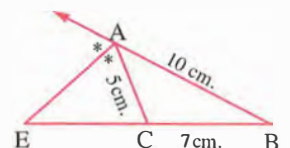
- (a) 3 (b) 5 (c) 4 (d) 6



(23) In the opposite figure :

$\overrightarrow{AE}$ bisects the exterior angle at A
 , then $BE = \dots\dots\dots \text{cm}$.

- (a) 7 (b) 14 (c) 8 (d) 21



(24) In the opposite figure :

$$\overline{DE} \parallel \overline{BC}, \overline{DC} \parallel \overline{BF}$$

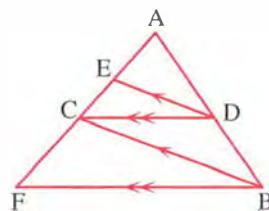
, then $AE \times AF = \dots\dots\dots$

(a) $AD \times AB$

(c) $(AE)^2$

(b) $(AC)^2$

(d) $AC \times AB$



(25) In the opposite figure :

$$\overline{AE} \text{ bisects } \angle BAD, \overline{FE} \parallel \overline{CB}$$

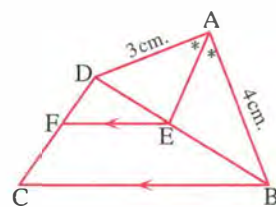
, then $\frac{DF}{FC} = \dots\dots\dots$

(a) $\frac{4}{3}$

(c) $\frac{9}{16}$

(b) $\frac{3}{4}$

(d) $\frac{16}{9}$



(26) In the opposite figure :

$$\overline{AD} \parallel \overline{EF} \parallel \overline{BC}, \frac{AE}{EB} = \frac{2}{3}$$

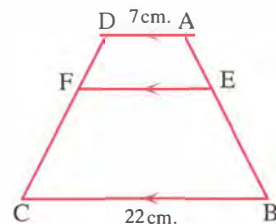
, then $EF = \dots\dots\dots$ cm.

(a) 9

(c) 13

(b) 11

(d) 15



(27) The interior and exterior bisectors at a vertex of an angle of a triangle are

(a) parallel.

(b) bisect each other.

(c) perpendicular.

(d) congruent.

Second

Essay questions

Answer the following questions :

1 If $L - 3$, $M - 3$ are the two roots of the equation : $x^2 - 7x - 10 = 0$

, then form the equation whose roots are : $\frac{1}{L}$, $\frac{1}{M}$

2 ABC is a triangle in which $AB > AC$, $D \in \overline{AB}$ such that : $BD = AC$, $\overline{AE}$ is drawn to bisect $\angle BAC$ to cut $\overline{DC}$ at E, then $\overline{EF} \parallel \overline{BA}$ to cut $\overline{AC}$ at F

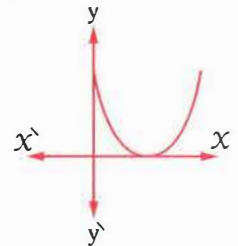
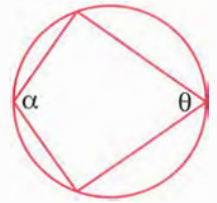
Prove that : $\overline{DF} \parallel \overline{BC}$


First Multiple choice questions


Interactive tests ⑤

Choose the correct answer from those given :

- (1) The angle in the standard position whose measure is -285° lie in the quadrant.
- (a) first (b) second (c) third (d) fourth
- (2) The range of the function $f(x) = 2 \cos 3x$ equals
- (a) $[-2, 2]$ (b) $[-3, 3]$ (c) $[0, 2]$ (d) $[-2, 0]$
- (3) The simplest form of the expression : $\cos(180^\circ + \theta) + \sin(90^\circ + \theta) = \dots\dots\dots$
- (a) 0 (b) 2 (c) $2 \cos \theta$ (d) $2 \sin \theta$
- (4) If $\sin(\theta + 13) = \cos(\theta + 17)$, where θ is positive acute angle, then $\tan \theta = \dots\dots\dots$
- (a) $\sqrt{3}$ (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\frac{\sqrt{3}}{2}$
- (5) In the opposite figure :
- If $5 \cos \theta = 3$, then $\tan \alpha = \dots\dots\dots$
- (a) $\frac{3}{4}$ (b) $-\frac{3}{4}$
(c) $\frac{3}{5}$ (d) $-\frac{4}{3}$
- (6) If the terminal side of a positive angle in standard position intersects the unit circle at the point $(\frac{\sqrt{3}}{2}, y)$, where $0 < \theta < 90^\circ$, then $\cot \theta = \dots\dots\dots$
- (a) $\sqrt{3}$ (b) $-\sqrt{3}$ (c) $2\sqrt{3}$ (d) $\frac{-1}{\sqrt{3}}$
- (7) If $L, \frac{4}{L}$ are the two roots of the equation : $x^2 + 7x + k = 0$, then $k = \dots\dots\dots$
- (a) 4 (b) 7 (c) -7 (d) 6
- (8) The opposite figure represents the curve of the function $f(x) = ax^2 + 2x + c$, then $a \cdot c = \dots\dots\dots$
- (a) -1 (b) -4
(c) 4 (d) 1
- (9) If the two roots of the equation : $mx^2 - 12x + 9 = 0$ are equal then $m = \dots\dots\dots$
- (a) 9 (b) 4 (c) 16 (d) 2
- (10) The sign of the function $f(x) = 4 - 2x$ is not negative in the interval
- (a) $[2, \infty[$ (b) $]2, \infty[$ (c) $]-\infty, 2[$ (d) $]-\infty, 2]$



(11) $(12i^{20} - 5i^{33}) - (7 - \sqrt{-81}) = \dots\dots\dots$

- (a) $5 - 4i$ (b) $5 + 4i$ (c) $-5 + 4i$ (d) $-5 - 4i$

(12) If a, b, c, d four consecutive positive integers, then $i^a + i^b + i^c + i^d = \dots\dots\dots$

- (a) zero (b) -1 (c) 1 (d) i

(13) If one of the two roots of the equation : $3x^2 + (a + 3)x + 7 = 0$ is the additive inverse of the other, then $a = \dots\dots\dots$

- (a) -3 (b) 3 (c) $\frac{1}{3}$ (d) $-\frac{1}{3}$

(14) The solution set of the inequality : $-x(x + 2) \geq 0$ in $\mathbb{R}$ is $\dots\dots\dots$

- (a) $[-2, 0]$ (b) $] -2, 0[$ (c) $\{-2, 0\}$ (d) $[-2, 2]$

(15) In the opposite figure :

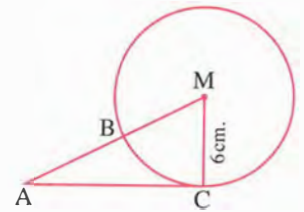
$\overline{AC}$ is tangent to circle M

, $MC = 6$ cm.

, $P_M(A) = 64$

, then $AB = \dots\dots\dots$ cm.

- (a) 3 (b) 4 (c) 5 (d) 6



(16) In the opposite figure :

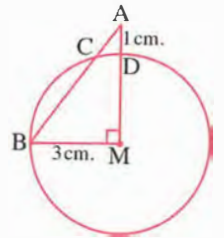
$\overline{MA} \perp \overline{MB}$ in circle M

its radius length = 3 cm.

, $AM = 1$ cm.

, then $BC = \dots\dots\dots$ cm.

- (a) 3.6 (b) 1.4 (c) 5 (d) 3

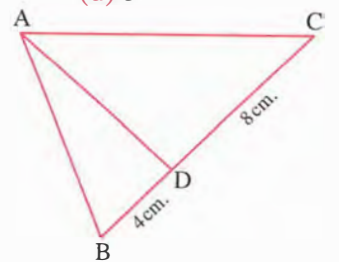


(17) In the opposite figure :

If $m(\angle B) = 2m(\angle DAB) = 2m(\angle DAC)$

, then $AB = \dots\dots\dots$ cm.

- (a) 4 (b) 6
(c) 8 (d) 9



(18) If $\triangle ABC \sim \triangle DEF$, $BC = 3EF$, then the factor of similarity of $\triangle ABC$ to $\triangle DEF$ equals $\dots\dots\dots$

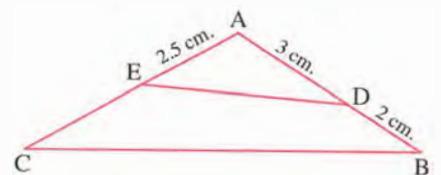
- (a) 3 (b) 1 (c) $\frac{1}{3}$ (d) $\frac{2}{3}$

(19) In the opposite figure :

$\triangle ABC \sim \triangle AED$

, then $EC = \dots\dots\dots$ cm.

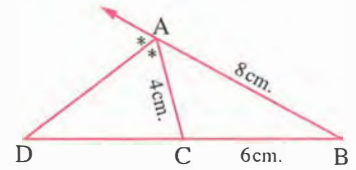
- (a) 2.5 (b) 3
(c) 3.5 (d) 4.5



(20) In the opposite figure :

CD = cm.

- (a) 2 (b) 4
(c) 6 (d) 8



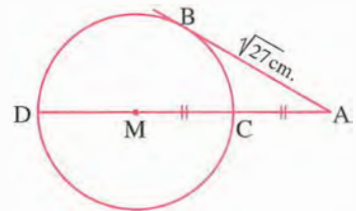
(21) Any two regular polygons of the same number of sides are

- (a) congruent. (b) equal in area.
(c) equal in perimeter. (d) similar.

(22) In the opposite figure :

MC = CA , the radius length
of the circle M = cm.

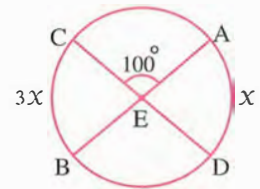
- (a) 2 (b) 3
(c) 4 (d) 5



(23) In the opposite figure :

The value of x =

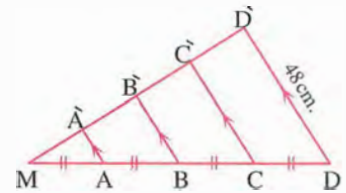
- (a) 10° (b) 20°
(c) 30° (d) 40°



(24) In the opposite figure :

If $DD = 48$ cm. , then $BB =$ cm.

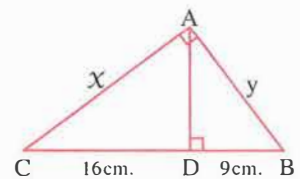
- (a) 36 (b) 24
(c) 16 (d) 12



(25) In the opposite figure :

$m(\angle BAC) = 90^\circ$, $\overline{AD} \perp \overline{BC}$
 , then $\frac{y}{x} =$

- (a) 1 (b) $\frac{4}{3}$
(c) $\frac{3}{4}$ (d) 2

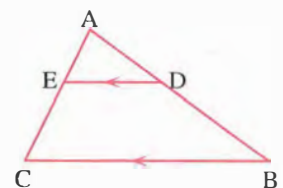


(26) In the opposite figure :

$\overline{DE} \parallel \overline{BC}$ where $\frac{AD}{DB} = \frac{2}{3}$

and if the area of the trapezium DBCE = 105 cm^2
 , then the area of triangle ADE = cm^2

- (a) 20 (b) 64 (c) 84 (d) 70



(27) In the opposite figure :

$\overline{AB} \parallel \overline{FE} \parallel \overline{CD}$, $AE = FC$

, $BF = 5$ cm. , $ED = 4$ cm.

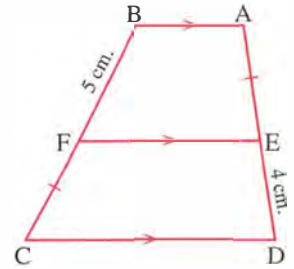
, then $AE = \dots\dots\dots$ cm.

(a) 2

(b) $5\sqrt{2}$

(c) $2\sqrt{5}$

(d) 20



Second

Essay questions

Answer the following questions :

1 If $\frac{4}{L}$, $\frac{4}{M}$ are the two roots of the equation : $X^2 - 5X + 2 = 0$

, then find the quadratic equation whose roots are L , M

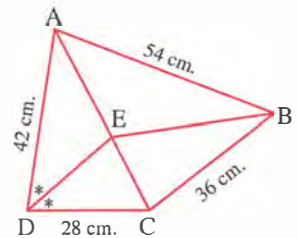
2 In the opposite figure :

$\overrightarrow{DE}$ bisects $\angle ADC$, $DA = 42$ cm.

, $DC = 28$ cm. , $BC = 36$ cm.

, $AB = 54$ cm.

Prove that : $\overrightarrow{BE}$ bisects $\angle ABC$



6

Alexandria Governorate



**Al Agamy Zone
Math Inspection**

First

Multiple choice questions



**Interactive
tests 6**

Choose the correct answer from those given :

(1) The maximum value of the function $f (X) = \cos X$ equals 1 and happens when $\theta = \dots\dots\dots$

(a) π

(b) $2 n \pi$

(c) $\pi + 2 n \pi$

(d) $\pi + n \pi$

(2) The solution set of the inequality : $- X (X + 3) \geq 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{0 , -3\}$

(b) $]-3 , 0[$

(c) $[-3 , 0[$

(d) $[-3 , 0]$

(3) If triangle $ABC \sim$ triangle XYZ and $2 AB = 3 XY$, then the perimeter of triangle ABC : the perimeter of triangle $XYZ = \dots\dots\dots$

(a) 4 : 9

(b) 9 : 4

(c) 2 : 3

(d) 3 : 2

(4) In the opposite figure :

If $\overline{AB} \cap \overline{CD} = \{E\}$, $AE = 3$ cm.

, $CE = 2$ cm. , $BE = 6$ cm.

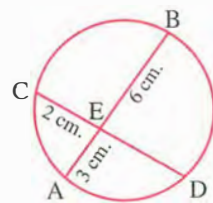
, then $CD = \dots\dots\dots$ cm.

(a) 9

(b) 8

(c) 11

(d) 6



(5) If the ratio between measures of the interior angles of a quadrilateral is $5 : 4 : 9 : 6$, then the measure of the smallest angle equals $\dots\dots\dots$

(a) $\frac{\pi}{12}$

(b) $\frac{\pi}{3}$

(c) $\frac{5\pi}{12}$

(d) $\frac{2\pi}{3}$

(6) If $x + yi = \sqrt{-4 + i^{22}}$, then $x - y = \dots\dots\dots$

(a) 3

(b) - 3

(c) 2

(d) - 2

(7) In the opposite figure :

$\overline{AB}$, $\overline{AC}$ are two tangents to the circle , $m(\widehat{BC}) = 140^\circ$

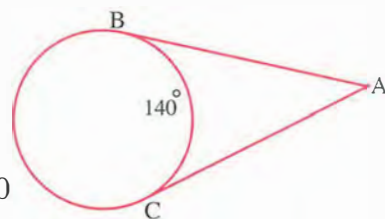
, then $m(\angle A) = \dots\dots\dots^\circ$

(a) 220

(b) 110

(c) 40

(d) 180



(8) The radian measure of the sum of the angles of the regular pentagon = $\dots\dots\dots$

(a) $\frac{1}{2} \pi$

(b) $\frac{2}{5} \pi$

(c) 2π

(d) 3π

(9) In triangle ABC if $\tan(A + B) = \frac{24}{7}$, then $\cos C = \dots\dots\dots$

(a) $\frac{24}{25}$

(b) $-\frac{24}{25}$

(c) $-\frac{7}{25}$

(d) $\frac{7}{25}$

(10) If $(2 - i)$ is one of the roots of the equation : $x^2 - 4x + k = 0$, then $k = \dots\dots\dots$

(a) 3

(b) - 3

(c) 5

(d) - 5

(11) In the opposite figure :

$E \in \overline{AC}$, $D \in \overline{AB}$ where $AD = 3$ cm. , $BD = 9$ cm.

, $BC = 6$ cm. , $EC = 5$ cm. , $EA = 4$ cm.

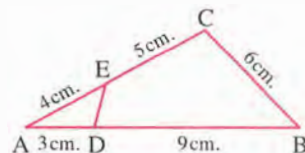
, then the length of $\overline{ED} = \dots\dots\dots$ cm.

(a) 3

(b) 2

(c) 6

(d) 5



(12) In the opposite figure :

If $\overline{ED} \parallel \overline{CB}$, $\overline{DC} \cap \overline{BE} = \{A\}$

, $AE = 3$ cm. , $AB = 6$ cm. , $AD = 2$ cm.

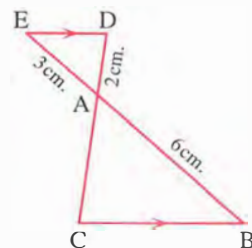
, then $CD = \dots\dots\dots$ cm.

(a) 6

(b) 4

(c) 3

(d) 5



(13) If $\sin \theta = \frac{3}{5}$ where $90^\circ < \theta < 180^\circ$, then $\sin (180^\circ - \theta) + \cos (\theta - 90^\circ) = \dots\dots\dots$

- (a) $\frac{4}{5}$ (b) 1 (c) $\frac{6}{5}$ (d) $-\frac{6}{5}$

(14) The function f where $f(x) = x^2 + 2x - 3$ is negative at $x \in \dots\dots\dots$

- (a) $[-3, 1]$ (b) $]-1, 3[$ (c) $[-3, -1]$ (d) $]-3, 1[$

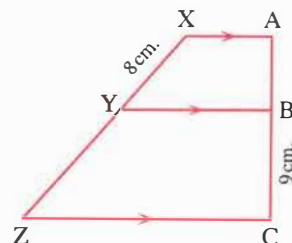
(15) In the opposite figure :

If $\overline{AX} \parallel \overline{BY} \parallel \overline{CZ}$, $YZ = 2AB$

, $BC = 9$ cm. , $XY = 8$ cm.

, then $AB = \dots\dots\dots$ cm.

- (a) 5 (b) 6
(c) 10 (d) 4



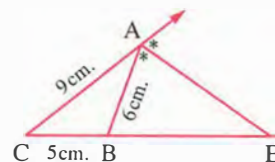
(16) In the opposite figure :

If $BC = 5$ cm. , $CA = 9$ cm.

, $\overline{AE}$ bisects the exterior angle at A

, $AB = 6$ cm. , then $BE = \dots\dots\dots$ cm.

- (a) 8 (b) 10 (c) 6 (d) 7



(17) $\cos (180^\circ + \theta) + \sin (90^\circ + \theta) = \dots\dots\dots$

- (a) $2 \sin \theta$ (b) $2 \cos \theta$ (c) 2 (d) zero

(18) If the roots of the equation : $x^2 + kx + 4 = 2x$ are real and equal , then $k = \dots\dots\dots$

- (a) -2 (b) 6 (c) -2 or 6 (d) 2 or -6

(19) If $a + bi = \frac{2+i}{2-i}$, then $a^2 + b^2 = \dots\dots\dots$

- (a) -i (b) -1 (c) 2 (d) 1

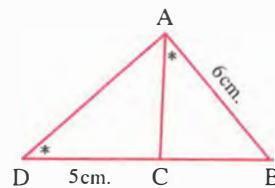
(20) In the opposite figure :

If $m(\angle BAC) = m(\angle D)$

, $AB = 6$ cm. , $DC = 5$ cm.

, then $BC = \dots\dots\dots$ cm.

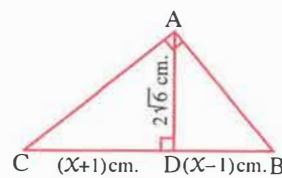
- (a) 4 (b) 6 (c) 9 (d) 10



(21) In the opposite figure :

$x = \dots\dots\dots$ cm.

- (a) 6 (b) 7
(c) 5 (d) 8



(22) If the two roots of the equation : $x^2 - 4x + k = 0$ are real , then $k \in \dots\dots\dots$

- (a) $]-\infty, 4[$ (b) $]4, \infty[$ (c) $]-\infty, 4]$ (d) $[4, \infty[$

(23) If L and M are the two roots of the equation : $x^2 - 5x + 6 = 0$, then the equation whose roots are (L - M) and (M - L) is

(a) $x^2 + 1 = 0$

(b) $x^2 - 1 = 0$

(c) $x^2 + 25 = 0$

(d) $x^2 - x = 0$

(24) If $\sin 8\theta \sec \theta = 1$ where $\theta \in]0, \frac{\pi}{15}[$, then $\tan 6\theta$ could equal

(a) 1

(b) $\frac{1}{2}$

(c) $\sqrt{3}$

(d) $\frac{\sqrt{3}}{3}$

(25) In the opposite figure :

If $\overline{ED} \parallel \overline{BA}$, $BE = 6$ cm. , $EC = 4$ cm.

, the area of the figure ABED = 42 cm^2

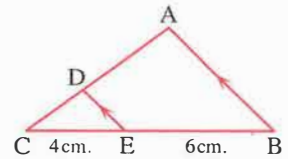
, then the area of $\Delta CED = \dots\dots\dots \text{cm}^2$

(a) 16

(b) 10

(c) 8

(d) 20



(26) In the opposite figure :

If the length of the radius of a circle of center M is 6 cm.

, $CD = 3$ cm. , $m(\angle A) = m(\angle M)$

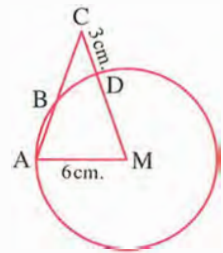
, then $CB = \dots\dots\dots$ cm.

(a) 5

(b) 4

(c) 3

(d) 6



(27) If the ratio between the perimeters of two similar triangles is 1 : 4 , the area of the smaller is 15 cm^2 , then the area of the bigger = $\dots\dots\dots \text{cm}^2$

(a) 16

(b) 160

(c) 225

(d) 240

Second Essay questions

Answer the following questions :

1 ABCD is a quadrilateral in which $AB = AD$, $\overline{AX}$ bisects $\angle BAC$ and intersects $\overline{BC}$ at X , $\overline{AY}$ bisects $\angle DAC$ and intersects $\overline{CD}$ at Y **Prove that : $\overline{XY} \parallel \overline{BD}$**

2 If L , M are the roots of the equation : $x^2 - 2x + 3 = 0$
form the equation of roots $L^3 M$, $L M^3$

**First Multiple choice questions**Interactive
tests **7****Choose the correct answer from those given :**

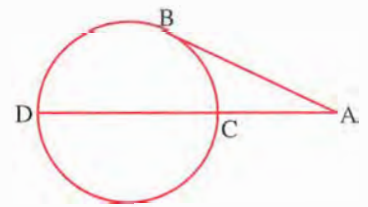
- (1) If $X = i$ is one of two roots of the equation : $X^2 - iX + k = 0$, then $k = \dots\dots\dots$
- (a) 0 (b) -1 (c) 4 (d) i
- (2) $(2 + i)(2 - i)(1 + i)^2 = \dots\dots\dots$
- (a) 10 i (b) -10 + 10 i (c) 5 + i (d) -1 + 4 i
- (3) The function $f(X) = -0.25X$ is negative at $X \in \dots\dots\dots$
- (a) $[0.25, \infty[$ (b) $[-0.25, \infty[$
(c) $]0, \infty[$ (d) $]-\infty, 0.25[$
- (4) The function $f(X) = X(11 - 2X) + 6$ is not negative at $X \in \dots\dots\dots$
- (a) $[2, 3[$ (b) $\mathbb{R} - [2, 3[$ (c) $]2, 6[$ (d) $[-0.5, 6]$
- (5) The solution set of the inequality : $(X - 2)(X - 1) \leq 6$ in $\mathbb{R}$ is $\dots\dots\dots$
- (a) $[-1, 4]$ (b) $\mathbb{R} - [1, 2]$ (c) $]2, 3[$ (d) $[1, 6]$
- (6) If L, M are the two roots of the equation : $(2 - k)X^2 + (2 - k)X + 4 = 0$ and $LM = 2$, then $k = \dots\dots\dots$
- (a) 5 (b) 0 (c) 4 (d) -2
- (7) If the two roots of the equation : $-X(X - 4) = k$ are real, then $k \in \dots\dots\dots$
- (a) $]-\infty, 4[$ (b) $[-0.25, \infty[$ (c) $]-\infty, 4]$ (d) $]-\infty, -4[$
- (8) If L, M are the two roots of the equation : $X^2 - 3X + 2 = 0$, then the equation with two roots $L + 1, M + 1$ is $\dots\dots\dots$
- (a) $X^2 - 5X + 6 = 0$ (b) $X^2 - 6X + 5 = 0$
(c) $X^2 + 5X + 6 = 0$ (d) $X^2 - 4X + 3 = 0$
- (9) ABCDEF is a regular hexagon of side length 6 cm. inscribed in a circle, then the length of arc BC = $\dots\dots\dots$ cm.
- (a) 3π (b) 2π (c) π (d) 6π
- (10) If θ is the measure of an angle in the standard position, its terminal side intersect the unit circle at the point $(0.6, y)$, then $\csc \theta = \dots\dots\dots$, $y > 0$
- (a) 0.6 (b) 0.8 (c) 1.25 (d) 1.4
- (11) If $\cot(90^\circ - \theta) = \cot(2\theta)$, $0 < \theta < 90^\circ$, then $\sin 3\theta = \dots\dots\dots$
- (a) 3 (b) 4 (c) 2 (d) 1

- (12) The angle of measure 2.02^{rad} lies in the quadrant.
 (a) second (b) first (c) third (d) fourth
- (13) Number of times of intersections between the curve $y = \sin 3x$ with the x -axis on the interval $[0, 2\pi] =$
 (a) 2 (b) 7 (c) 6 (d) 3
- (14) If $\tan \theta = 0.75$, $0 < \theta < 90^\circ$, then $\sec (270^\circ - \theta) \approx$
 (a) 1.3 (b) -1.45 (c) -1.67 (d) 2.1
- (15) The ratio between two corresponding sides of two similar triangle is $2 : 5$ if the area of the first one = 16 cm^2 , then the area of the second one = cm^2
 (a) 100 (b) 80 (c) 40 (d) 120

(16) In the opposite figure :

$AB = 10 \text{ cm.}$, $CD = 15 \text{ cm.}$
 , then $AC =$ cm.

- (a) 4 (b) 5
 (c) 15 (d) 18

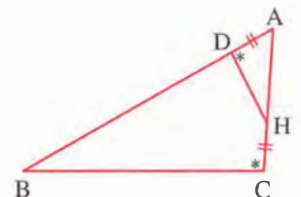


- (17) $\overline{AB}$ is a chord of length = 8 cm. in a circle of center M , $\overline{MC} \perp \overline{AB}$ to intersect it at C and intersect the circle at D if $CD = 2 \text{ cm.}$, then the length of the radius of the circle = cm.
 (a) 8 (b) 4 (c) 5 (d) 7
- (18) Two concentric circles at M , the lengths of their radii are 12 cm. , 7 cm. , $\overline{AD}$ is a chord in the larger circle to intersect the smaller circle at B and C respectively, then $AB \times AC =$
 (a) 19 (b) 84 (c) 25 (d) 95

(19) In the opposite figure :

$AD = 3 \text{ cm.}$, $AH = 6 \text{ cm.}$
 , $AD = HC$, $DH = x \text{ cm.}$
 , $BC = (x + 10) \text{ cm.}$
 , then $x =$

- (a) 5 (b) 3 (c) 8 (d) 4



- (20) If k is the scale factor of similarity of polygon M_1 to polygon M_2 , $k > 1$, then the polygon M_1 is polygon M_2
 (a) congruent to (b) enlargement to
 (c) minimization to (d) half the area of the

- (21) XYZ is a right-angled triangle at Y , $\overline{YL} \perp \overline{XZ}$, XY = 6 cm. , YZ = 8 cm.
 , then XL =

(a) 10 (b) 4.8 (c) 3.6 (d) 6.4

- (22) In the opposite figure :

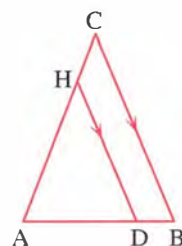
$\overline{DH} \parallel \overline{BC}$, CH = X cm.

, AH = 12 cm. , BD = 3 cm.

, AD = (X + 5) cm.

, then X =

(a) 9 (b) 12 (c) 4 (d) 3



- (23) In the opposite figure :

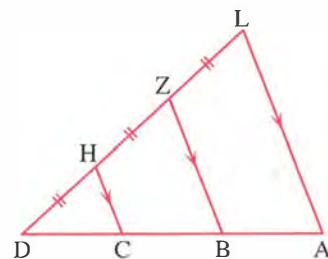
$\overline{CH} \parallel \overline{BZ} \parallel \overline{AL}$, DH = HZ = ZL

, AB = X cm. , BC = 2 X - 7 cm.

, CD = X - y cm.

, then X + y = cm.

(a) 9 (b) 7 (c) 5 (d) 3



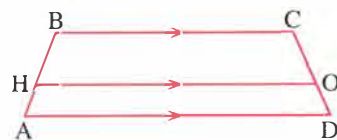
- (24) In the opposite figure :

$\overline{BC} \parallel \overline{HO} \parallel \overline{AD}$, BC = 16 cm.

, AD = 24 cm. , $\frac{BH}{HA} = \frac{5}{3}$

, then HO = cm.

(a) 12 (b) 17 (c) 21 (d) 25



- (25) ABC is a triangle in which AB = 8 cm. , AC = 6 cm. , $\overline{AD}$ bisect $\angle CAB$ and intersect $\overline{BC}$ at D , AD = 6 cm. , then BD = cm.

(a) 4 (b) 8 (c) 3 (d) 6

- (26) ABC is a triangle in which $\overline{BD}$ bisects the exterior angle B and intersects $\overline{AC}$ at D , if AB = 8 cm. , BC = 6 cm. , DC = 15 cm. , then AC = cm.

(a) 5 (b) 10 (c) 12 (d) 20

- (27) If a point C is outside the circle M , $\overline{CB}$ is tangent to the circle at B and CD intersecting circle at H , D and passes throw the center M , if $m(\angle C) = 20^\circ$, then the measure of the arc $(\widehat{BD}) = \dots\dots\dots^\circ$

(a) 90 (b) 110 (c) 100 (d) 60

Second Essay questions

Answer the following questions :

1 Find the necessary condition to be one of two roots of the equation :

$$b x^2 - 4 b x + a = 0 \text{ three times of the other root.}$$

2 ABC is triangle in which $\overrightarrow{BM}$, $\overrightarrow{CM}$ bisects exterior angles at B and C respectively, $\overrightarrow{BM} \cap \overrightarrow{CM} = \{M\}$ Prove that : $\overrightarrow{AM}$ bisects $\angle BAC$

8 El-Kalyoubia Governorate



Mathematics Supervision

First Multiple choice questions



Interactive tests 8

Choose the correct answer from those given :

(1) If one of the two roots of the equation : $x^2 - (k - 9)x - 17 = 0$ is the additive inverse of the other root , then k =

- (a) 17 (b) 9 (c) -9 (d) -17

(2) The conjugate of the number $3 - 2i$ is

- (a) $-3 + 2i$ (b) $-3 - 2i$ (c) $3 + 2i$ (d) $2 + 3i$

(3) The equation where its two roots are $3i$ and $-3i$ is

- (a) $x^2 = 9i$ (b) $x^2 - 9 = 0$
(c) $x^2 + 9 = 0$ (d) $x^2 - 6x + 9 = 0$

(4) The function $f(x) = 6 - 2x$ is not negative at

- (a) $x > 3$ (b) $x < 3$ (c) $x \geq 3$ (d) $x \leq 3$

(5) The equation : $2x^2 - 4x + k = 0$ has two different real roots if

- (a) $k = 8$ (b) $k > 2$ (c) $k < 2$ (d) $k = 2$

(6) The solution set of the inequality : $x^2 - 5x \leq 0$ in $\mathbb{R}$ is

- (a) $[0, 5]$ (b) $]5, \infty[$ (c) $] - \infty, 5[$ (d) $\emptyset$

(7) If the two roots of the equation : $ax^2 + bx + c = 0$ are 4 and 5 , then $\frac{b+c}{a} = \dots\dots\dots$

- (a) 20 (b) 11 (c) 9 (d) 5

(8) The measure of the central angle in a circle of radius length 15 cm. and opposite to an arc of length 5π cm. =°

- (a) 60 (b) 90 (c) 120 (d) 150

(9) The angle whose measure $\frac{7\pi}{6}$ lies in the quadrant.

- (a) first (b) second (c) third (d) fourth

(10) The maximum value of the function : $f(x) = 2 \sin 5x$ is

- (a) 5 (b) 2 (c) -2 (d) -5

(11) The general solution of the equation : $\tan 5\theta = \cot 4\theta$ is where $n \in \mathbb{Z}$

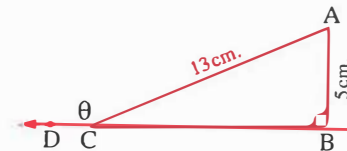
- (a) $\frac{\pi}{2} + \frac{2\pi}{9}n$ (b) $\frac{\pi}{18} + \frac{2\pi}{9}n$ (c) $\frac{\pi}{18} + \frac{\pi}{9}n$ (d) $\frac{\pi}{2} + \frac{\pi}{9}n$

(12) In the opposite figure :

If $D \in \overrightarrow{BC}$

, then $\cos \theta = \dots\dots\dots$

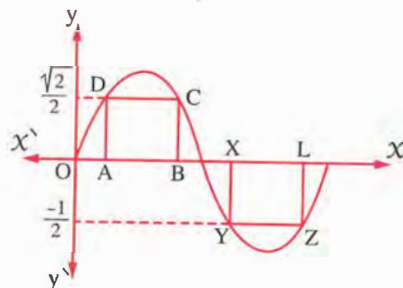
- (a) $\frac{12}{13}$ (b) $\frac{5}{13}$
(c) $\frac{-5}{13}$ (d) $\frac{-12}{13}$



(13) The opposite figure represent the function $f(x) = \sin x$

, then $\frac{\text{the area of rectangle ABCD}}{\text{the area of rectangle XYZL}} = \dots\dots\dots$

- (a) $\frac{3\sqrt{2}}{4}$ (b) $\frac{3\sqrt{2}}{2}$
(c) $\frac{5\sqrt{2}}{2}$ (d) $\frac{5\sqrt{2}}{4}$



(14) If L and M are the two roots of the equation : $x^2 - 7x + 3 = 0$

, then the value of : $L^2M + LM^2 = \dots\dots\dots$

- (a) 7 (b) 3 (c) 10 (d) 21

(15) If $\triangle ABC \sim \triangle DEF$, $AB = 2$ cm. , $DE = 4$ cm. , $EF = 8$ cm.

, then the length of $\overline{BC} = \dots\dots\dots$ cm.

- (a) 1 (b) 2 (c) 3 (d) 4

(16) If the ratio between the perimeter of two similar polygons is 4 : 9 , then the ratio between their areas is

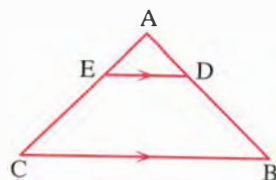
- (a) 2 : 3 (b) 4 : 9 (c) 16 : 81 (d) 81 : 16

(17) In the opposite figure :

$\overline{DE} \parallel \overline{BC}$, $2AD = DB$, $DE = 4$ cm.

, then $BC = \dots\dots\dots$ cm.

- (a) 6 (b) 8
(c) 12 (d) 16



(18) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$, $BD = 18$ cm.

, $AB = 27$ cm. , $AC = 15$ cm.

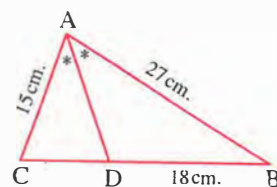
, then $AD = \dots\dots\dots$ cm.

(a) 15

(b) 10

(c) 9

(d) 8



(19) In the opposite figure :

$\overrightarrow{CB} \cap \overrightarrow{ED} = \{A\}$, $m(\widehat{CE}) = 130^\circ$

, $m(\angle A) = 40^\circ$

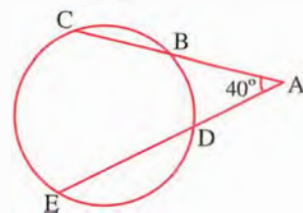
, then $m(\widehat{BD}) = \dots\dots\dots^\circ$

(a) 40

(b) 50

(c) 65

(d) 85



(20) In the opposite figure :

$\overline{DE} \parallel \overline{BC}$, $m(\angle A) = 90^\circ$

, $BD = 3$ cm. , $AE = 8$ cm.

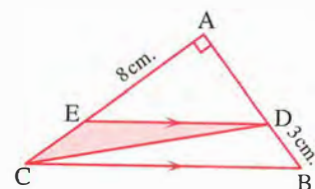
, then the area of $\triangle DEC = \dots\dots\dots \text{cm}^2$

(a) 24

(b) 18

(c) 12

(d) 10



(21) In the opposite figure :

$\overrightarrow{AB}$ is tangent to the circle M

, $AC = 9$ cm. , $CD = 7$ cm.

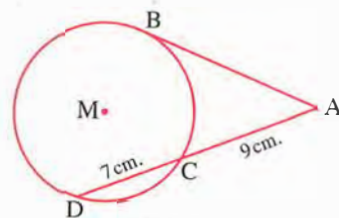
, then $AB = \dots\dots\dots$ cm.

(a) 4

(b) $3\sqrt{7}$

(c) 12

(d) 16



(22) If $P_M(A) = 64$, $MA = 10$ cm. , then the circumference of the circle M = $\dots\dots\dots$

(a) 6π

(b) 10π

(c) 12π

(d) 36π

(23) In the opposite figure :

$\overline{AB} \cap \overline{CD} = \{E\}$, $AE = x - 1$

, $EB = x + 1$, $CE = 3$ cm.

, $ED = 8$ cm.

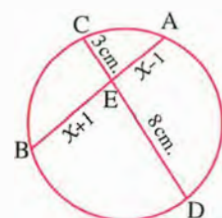
, then $x = \dots\dots\dots$ cm.

(a) 3

(b) 4

(c) 5

(d) 6



(24) In the opposite figure :

$\overrightarrow{AD}$ bisects $(\angle EAC)$, $AB = 8$ cm.

, $BC = 6$ cm. , $AC = 4$ cm.

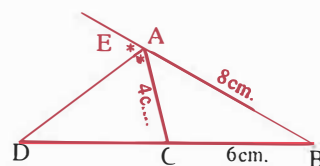
, then $CD = \dots\dots\dots$ cm.

(a) 6

(b) 8

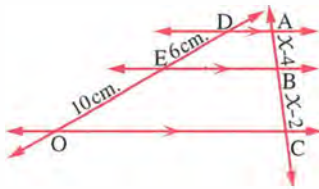
(c) 9

(d) 12



(25) In the opposite figure :

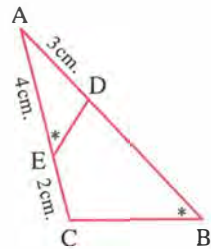
$\overrightarrow{AD} \parallel \overrightarrow{BE} \parallel \overrightarrow{OC}$, $AB = x - 4$
 , $BC = x - 2$, $DE = 6$ cm. , $EO = 10$ cm.
 , then $x = \dots\dots\dots$



- (a) 4
- (b) 5
- (c) 6
- (d) 7

(26) In the opposite figure :

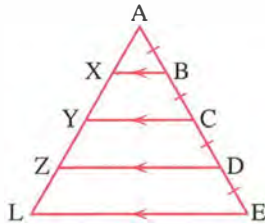
$m(\angle AED) = m(\angle B)$, $AD = 3$ cm.
 , $AE = 4$ cm. , $CE = 2$ cm.
 , then $BD = \dots\dots\dots$ cm.



- (a) 5
- (b) 6
- (c) 7
- (d) 8

(27) In the opposite figure :

$AB = BC = CD = DE$, $\overrightarrow{XB} \parallel \overrightarrow{YC} \parallel \overrightarrow{ZD} \parallel \overrightarrow{LE}$
 , the area of the figure $CDZY = 20$ cm²
 , then the area of the figure $DELZ = \dots\dots\dots$ cm²



- (a) 28
- (b) 35
- (c) 42
- (d) 49

Second

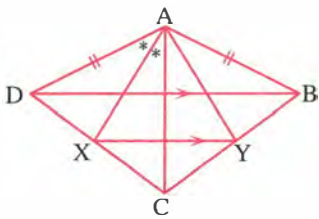
Essay questions

Answer the following questions :

1 If L , M are the two roots of the equation : $x^2 - 5x + 7 = 0$
 , find the numerical value of : $L^2 + 5M - 2LM$

2 In the opposite figure :

ABCD is quadrilateral where $AB = AD$
 , $\overrightarrow{AX}$ bisects $\angle CAD$, $\overrightarrow{XY} \parallel \overrightarrow{BD}$
 Prove that : $\overrightarrow{AY}$ bisects $\angle BAC$



9

El-Sharkia Governorate



West Zone
Math Inspection

First Multiple choice questions



Interactive
tests (9)

Choose the correct answer from those given :

(1) The simplest form of i^{42} is

- (a) 1 (b) -1 (c) i (d) -i

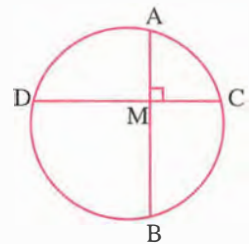
(2) The smallest positive measure of the angle whose measure -750° is

- (a) $\frac{6\pi}{11}$ (b) $\frac{11\pi}{6}$ (c) $\frac{6\pi}{5}$ (d) $\frac{5\pi}{6}$

(3) In the opposite figure :

$$m(\widehat{AC}) + m(\widehat{BD}) = \dots\dots\dots$$

- (a) 45°
(b) 90°
(c) 180°
(d) 270°



(4) In the opposite figure :

$\overline{BC} \parallel \overline{DH}$, $BC = 5$ cm. , $DH = 3$ cm.
 , then $x = \dots\dots\dots$

- (a) 4 (b) 8 (c) 11 (d) 15



(5) The directed angle its terminal side cut the unit circle at (a, b) , $a > 0$, $b < 0$ lies in quadrant

- (a) fourth. (b) second. (c) first. (d) third.

(6) The conjugate of $(3i - 4)$ is

- (a) $-3i + 4$ (b) $3i - 4$ (c) $3i + 4$ (d) $-3i - 4$

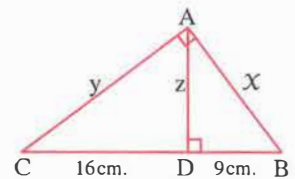
(7) A is point outside the circle M , $AM = 8$ cm. , $r = 5$ cm. , then $P_M(A) = \dots\dots\dots$

- (a) 30 (b) 39 (c) -39 (d) -30

(8) In the opposite figure :

$AB = x$ cm. , $AD = z$ cm.
 , $AC = y$ cm. , $BD = 9$ cm. , $CD = 16$ cm.
 , then $x + y + z = \dots\dots\dots$

- (a) 12 (b) 15 (c) 20 (d) 47



(9) If $x = -1$ is one root of roots of : $x^2 - kx - 6 = 0$, then $k = \dots\dots\dots$

- (a) 5 (b) -5 (c) 6 (d) -6

(10) Arc of circle its length is 5π and the radius of circle 15 cm. opposite to central angle its measure

- (a) 30° (b) 60° (c) 90° (d) 180°

(11) If the ratio between the area of two similar triangles is 4 : 9 and the perimeter of smaller triangle 60 cm. , then the perimeter of greatest one = cm.

- (a) 70 (b) 80 (c) 90 (d) 120

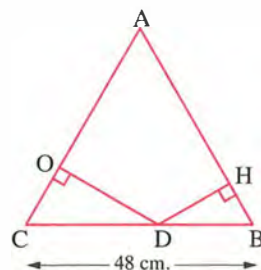
(12) In the opposite figure :

ABC is isosceles triangle

, $AB = AC$, $BC = 48$ cm.

, $\frac{DH}{DO} = \frac{5}{7}$

, then $DC = \dots\dots\dots$



- (a) 12 (b) 20

- (c) 24 (d) 28

(13) The range of function $f(x) = 4 \sin x$ where $x \in [0, \pi]$ =

- (a) $[0, 4]$ (b) $[0, 4[$ (c) $[-4, 0]$ (d) $[-4, 4]$

(14) If one root of two roots of equation : $kx^2 - 7x + 2k - 3 = 0$ is multiplicative inverse of other , then $k = \dots\dots\dots$

- (a) 3 (b) 1 (c) -3 (d) -1

(15) In the opposite figure :

Semicircle its center M

, then $x = \dots\dots\dots$



- (a) 3 (b) 5 (c) 7 (d) 8

(16) If k is similarity coefficient between two polygons , then the two polygons are congruent if

- (a) $k = 0$ (b) $k > 0$ (c) $0 < k < 1$ (d) $k = 1$

(17) If L, M two roots of equation : $x^2 - 8x + 15 = 0$, $L > M$, then $L + 2M = \dots\dots\dots$

- (a) 11 (b) 8 (c) 15 (d) -8

(18) If θ is acute angle , where $\sin 2\theta = \cos \theta$, then $\tan(\theta + 15) = \dots\dots\dots$

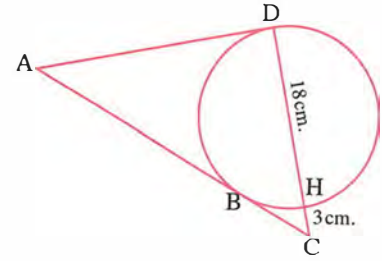
- (a) $\frac{1}{2}$ (b) -1 (c) 1 (d) $\frac{\sqrt{3}}{2}$

(19) The bisector of exterior angle of vertex of an isosceles triangle its base.

- (a) bisect (b) perpendicular (c) parallel (d) congruent

(20) In the opposite figure :

$\overrightarrow{AD}$, $\overrightarrow{AB}$ two tangents of the circle at D
 , B respectively , $\overrightarrow{CH}$ cut the circle at H , D
 and $CH = 3$ cm. , $HD = 18$ cm.
 , then $(AC - AD) = \dots\dots\dots$ cm.



(a) $7\sqrt{2}$

(b) $7\sqrt{3}$

(c) $2\sqrt{7}$

(d) $3\sqrt{7}$

(21) If L , M are roots of equation : $X^2 - 5X - 6 = 0$, then $L^2 - 5L + 3 = \dots\dots\dots$

(a) - 6

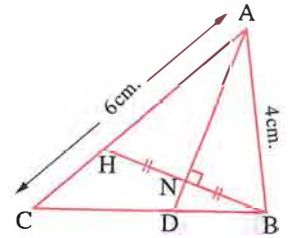
(b) 6

(c) 9

(d) - 3

(22) In the opposite figure :

If $AC = 6$ cm. , $AB = 4$ cm.
 , N midpoint of $\overline{BH}$
 , $\overline{AD} \perp \overline{BH}$
 , then $\frac{BD}{DC} = \dots\dots\dots$



(a) $\frac{1}{2}$

(b) $\frac{2}{3}$

(c) $\frac{1}{3}$

(d) $\frac{3}{2}$

(23) The sign of function $f(X) = 7 - X$ is not negative in $\dots\dots\dots$

(a) $]-\infty, 7[$

(b) $[0, 7[$

(c) $]-\infty, 7]$

(d) $\mathbb{R}$

(24) If $\cot(180^\circ + \theta) = \frac{3}{4}$, then $9 \tan^2 \theta = \dots\dots\dots$

(a) 9

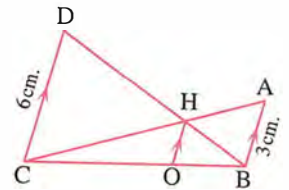
(b) 16

(c) 12

(d) 6

(25) In the opposite figure :

If $\overline{AB} \parallel \overline{HO} \parallel \overline{CD}$
 , $AB = 3$ cm. , $DC = 6$ cm.
 , then $HO = \dots\dots\dots$



(a) 2

(b) 2.5

(c) 1.5

(d) 1

(26) If $X^2 - 2\sqrt{2}X + a = 0$ and its roots are complex and not real , then $a \in \dots\dots\dots$

(a) $]-\infty, 2]$

(b) $[2, \infty[$

(c) $]2, \infty[$

(d) $[-2, 2]$

(27) ABC is right-angled triangle at B , $\overrightarrow{AD}$ bisect $\angle A$ and cut $\overline{BC}$ at D , then $BD = 24$ cm. ,
 $BA : AC = 3 : 5$, then the perimeter of triangle ABC = $\dots\dots\dots$

(a) 177

(b) 182

(c) 184

(d) 192

Second Essay questions

Answer the following questions :

- 1 Determine the sign of function $f(x) = x^2 - x - 6$, then find the solution set of the inequality $f(x) > \text{zero}$

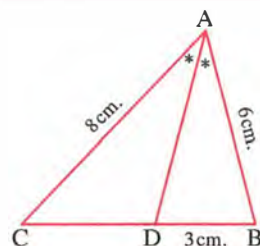
- 2 In the opposite figure :

$\overline{AD}$ bisect $\angle A$ and cut $\overline{BC}$ in D

, $AB = 6 \text{ cm.}$, $AC = 8 \text{ cm.}$

, $BD = 3 \text{ cm.}$

Find the length of : $\overline{AD}$



10 El-Monofia Governorate



Shebin El-Khoun Directorate
Mathematics Supervision

First Multiple choice questions



Interactive
tests 10

Choose the correct answer from those given :

- (1) If the two roots of the equation : $x^2 + 2x + k = 0$ are real , then $k \in \dots\dots\dots$
- (a) $[1, \infty[$ (b) $]1, \infty[$ (c) $]-\infty, 1]$ (d) $]-\infty, 1[$
- (2) The quadratic function $f : f(x) = x^2 - 7x + 10$ is negative in the interval $\dots\dots\dots$
- (a) $]2, 5[$ (b) $\mathbb{R} -]2, 5[$ (c) $[2, 5]$ (d) $\mathbb{R} - [2, 5]$
- (3) If $8x + yi = i^{47} + 24$, where $i^2 = -1$, then $x - y = \dots\dots\dots$
- (a) 2 (b) 4 (c) -4 (d) 25
- (4) The equation which its two roots are $3i$ and $-3i$ is $\dots\dots\dots$
- (a) $x^2 = 3i$ (b) $x^2 - 9 = 0$
(c) $x^2 - 6i + 9 = 0$ (d) $x^2 + 9 = 0$
- (5) The solution set of the inequality $x(x - 2) \leq 15$ in $\mathbb{R}$ is $\dots\dots\dots$
- (a) $\mathbb{R} - \{-3, 5\}$ (b) $\mathbb{R} -]3, 5[$
(c) $[-3, 5]$ (d) $\mathbb{R} - [-3, 5]$
- (6) The value of $\sec(300^\circ) \sin(270^\circ - \theta) + \tan(-45^\circ) \cos(360^\circ - \theta)$ is $\dots\dots\dots$
- (a) $-3 \sin \theta$ (b) $-3 \cos \theta$ (c) $3 \cos \theta$ (d) 0
- (7) If the product of two roots of the equation : $(k - 2)x^2 - 6x + 12 = 0$ equals 3 , then $k = \dots\dots\dots$
- (a) 6 (b) 4 (c) 14 (d) 2

(8) If L^2 and L are the two roots of the equation : $X^2 + aX + 8 = 0$, then $a = \dots\dots\dots$

- (a) -6 (b) 6 (c) 4 (d) 8

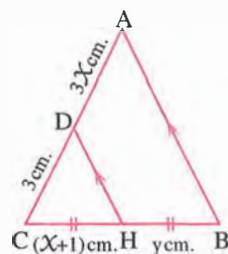
(9) The conjugate of the number $(5i - 2)$ is $\dots\dots\dots$

- (a) $5i + 2$ (b) $-5i + 2$ (c) $-2 - 5i$ (d) $7 - 7i$

(10) In the opposite figure :

$X + y = \dots\dots\dots$

- (a) 1 (b) 8
(c) 2 (d) 3



(11) The measure of the smallest positive angle satisfy the relation :

$2 \sin \theta = -1$ is $\dots\dots\dots$

- (a) 30° (b) 120° (c) 210° (d) 300°

(12) The maximum value of the function $f : f(\theta) = 3 \sin 2\theta$ is $\dots\dots\dots$

- (a) 3 (b) -3 (c) 2 (d) -2

(13) If $\sec(3\theta + 15) = \csc(35 - \theta)$ where θ is an acute angle , then $\csc \frac{3}{2}\theta = \dots\dots\dots$

- (a) 2 (b) $\sqrt{3}$ (c) $\sqrt{2}$ (d) $\frac{1}{2}$

(14) If the terminal side of the angle θ in standard position intersects the unit circle at the point $B\left(x, \frac{4}{5}\right)$, where $x < 0$, then $\sin(270^\circ - \theta) = \dots\dots\dots$

- (a) $-\frac{3}{5}$ (b) $\frac{4}{5}$ (c) $\frac{3}{5}$ (d) $-\frac{4}{5}$

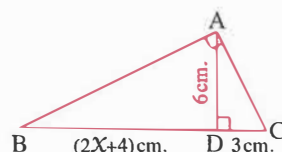
(15) The length of the arc of circle whose diameter length is 12 cm. and opposite to a central angle of measure $90^\circ = \dots\dots\dots$ cm.

- (a) $\frac{3}{2}\pi$ (b) 3π (c) 6π (d) $\frac{5}{2}\pi$

(16) In the opposite figure :

$X = \dots\dots\dots$

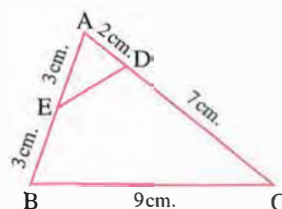
- (a) 5.3 (b) 4
(c) -1 (d) 0



(17) In the opposite figure :

$DE = \dots\dots\dots$ cm.

- (a) 2 (b) 4.5
(c) 3 (d) 5



(18) In the opposite figure :

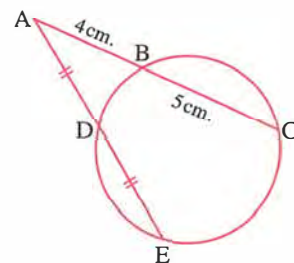
AD = cm.

(a) $2\sqrt{3}$

(c) 10

(b) $3\sqrt{2}$

(d) 4



(19) In the opposite figure :

If $\overline{DE} \parallel \overline{BC}$

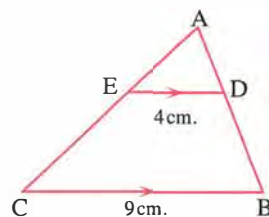
, then $\frac{\text{area of } \triangle ADE}{\text{area of figure DBCE}} = \dots\dots\dots$

(a) $\frac{4}{9}$

(c) $\frac{16}{65}$

(b) $\frac{16}{81}$

(d) $\frac{2}{3}$



(20) In the opposite figure :

$\triangle ABC \sim \triangle EDC$

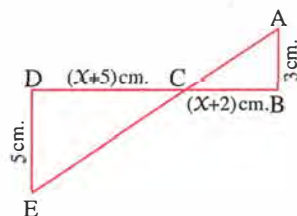
, then $X = \dots\dots\dots$

(a) $\frac{2}{5}$

(c) 9.5

(b) 2.5

(d) 3



(21) If the ratio between the areas of two similar triangles 4 : 9 , and the perimeter of the greater triangle = 90 cm. , then the perimeter of the smaller triangle = cm.

(a) 30

(b) 135

(c) 180

(d) 60

(22) The exterior bisector of the vertex of the isosceles triangle its base.

(a) bisects

(c) parallel to

(b) congruent to

(d) perpendicular to

(23) In the opposite figure :

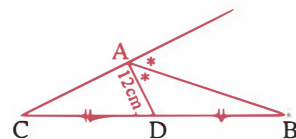
AC = cm.

(a) 12

(c) 24

(b) 6

(d) 8



(24) In the opposite figure :

$\overline{AD} \parallel \overline{HE} \parallel \overline{BC}$, AH = EC

, DE = 4 cm. and HB = 9 cm.

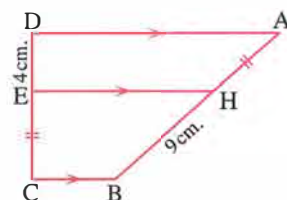
, then EC = cm.

(a) 36

(c) 6

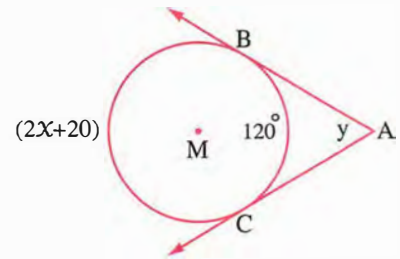
(b) 12

(d) 5



(25) In the opposite figure :

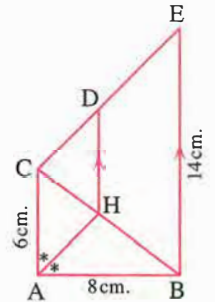
$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to the circle M
 $m(\widehat{BC}) = 120^\circ$, the measure of the major
 arc $\widehat{BC} = (2X + 20)^\circ$ and $m(\angle A) = y^\circ$
 , then $X + y = \dots\dots\dots^\circ$



- (a) 170 (b) 50 (c) 120 (d) 60

(26) In the opposite figure :

$\overrightarrow{AH}$ bisects $\angle BAC$, $\overrightarrow{DH} \parallel \overrightarrow{EB}$
 $AC = 6$ cm. , $AB = 8$ cm. and $EB = 14$ cm.
 , then $DH = \dots\dots\dots$ cm.



- (a) 3 (b) 4
 (c) 7 (d) 6

(27) If the distance between the point and the center of a circle = 15 cm. and the power of this point with respect to the circle = 144 cm^2 , then the radius length of the circle = $\dots\dots\dots$ cm.

- (a) 81 (b) 9 (c) $\sqrt{963}$ (d) 18

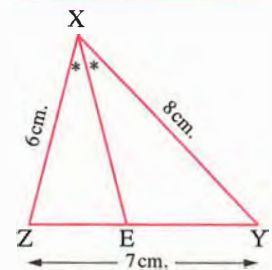
Second Essay questions

Answer the following questions :

1 If L and M are the two roots of the equation : $X^2 - 5X + 7 = 0$, then find the equation whose roots are : $(L + 2)$, $(M + 2)$?

2 In the opposite figure :

$\overrightarrow{XE}$ bisects $\angle YXZ$ and intersects $\overrightarrow{YZ}$ at E
 , if $XZ = 6$ cm. , $XY = 8$ cm. and $YZ = 7$ cm.
 , then find the length of each of $\overrightarrow{YE}$ and $\overrightarrow{XE}$





First Multiple choice questions

Choose the correct answer from those given :

(1) If L and M are the two roots of the equation : $X^2 + 1 = 0$, then $L^{2022} + M^{2022} = \dots\dots\dots$

- (a) $-2i$ (b) $2i$ (c) -2 (d) 2022

(2) If the terminal side of the angle whose measure θ drawn in the standard position intersects the unit circle at (a, b) , then $\sin \theta + \tan \theta = \dots\dots\dots$

- (a) $\frac{a-a}{a}$ (b) $\frac{a+b}{a}$ (c) $a - \frac{b}{a}$ (d) $a - b$

(3) In the opposite figure :

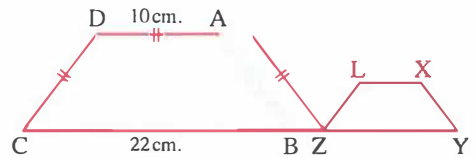
The polygon ABCD ~ The polygon XYZL

, the perimeter of XYZL = 26 cm.

, AD = 10 cm. , BC = 22 cm. , AB = AD = DC

, then $\frac{AD}{XL} = \dots\dots\dots$

- (a) $1 : 2$ (b) $2 : 3$ (c) $3 : 4$ (d) $2 : 1$



(4) In the opposite figure :

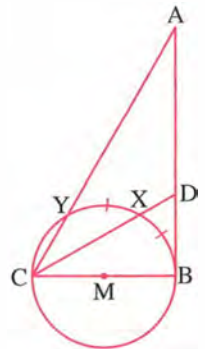
$\overline{AB}$ is a tangent to circle M at B

, $m(\widehat{BX}) = m(\widehat{YX})$, $BD = 2\sqrt{3}$ cm.

, $AD = 4\sqrt{3}$ cm.

, then $AY = \dots\dots\dots$ cm.

- (a) 3 (b) 6
(c) 9 (d) 12



(5) If $a + bi = \frac{2+i}{2-i}$, then $a^2 + b^2 = \dots\dots\dots$

- (a) 1 (b) -1 (c) 2 (d) $-i$

(6) The angle with measure $\frac{3\pi}{2}$ in standard position $\dots\dots\dots$

- (a) lies in the first quadrant. (b) lies in the second quadrant.
(c) lies in the third quadrant. (d) is a quadrantal angle.

(7) In the opposite figure :

If $\frac{x-y}{x+y} = \frac{2}{7}$

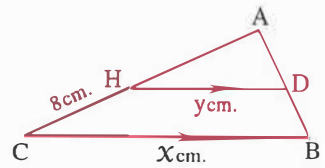
, then AH = cm.

(a) 16

(b) 15

(c) 12

(d) 10



(8) In the opposite figure :

A unit circle M and $\overline{AB}$ is a tangent to the circle at B

, $\overline{CD} \perp \overline{MB}$

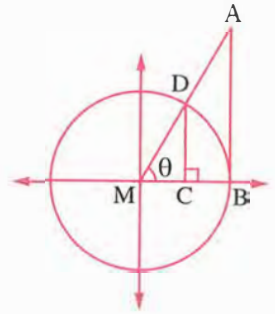
, then $\frac{AB}{CD} = \dots\dots\dots$

(a) $\sec \theta$

(b) $\cos \theta$

(c) $\tan \theta$

(d) $\csc \theta$



(9) If one of the two roots of the equation : $m x^2 + 2 x + 5 = 0$ is the multiplicative inverse of the other root , then m =

(a) - 5

(b) - 2

(c) 2

(d) 5

(10) If $7 \csc \theta = 25$, where $\theta \in \left] \frac{\pi}{2}, \pi \right[$, then $\tan (\pi + \theta) - \cot \left(\theta - \frac{\pi}{2} \right) = \dots\dots\dots$

(a) $-\frac{7}{24}$

(b) zero

(c) $-\frac{7}{12}$

(d) $\frac{7}{12}$

(11) If the ratio between the lengths of the diagonals of two squares is 2 : 5 and the area of the smaller square is 4 cm^2 , then the area of the greater square = cm^2

(a) 25

(b) 16

(c) 10

(d) 20

(12) The arc of length $5 \pi \text{ cm}$. in a circle of radius length 15 cm. is opposite to central angle of measure $^\circ$

(a) 30

(b) 60

(c) 90

(d) 180

(13) In the opposite figure :

The figure EDBC is cyclic quadrilateral

, AE = 2.5 cm. , AD = 3 cm.

, DB = 2 cm.

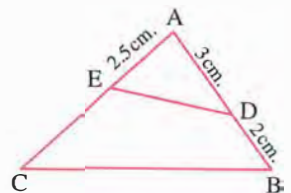
, then EC = cm.

(a) 3.5

(b) 6

(c) 7.5

(d) 15



(14) If the two roots of the equation : $x^2 - 4 x + k = 0$ are two equal real numbers , then k =

(a) 1

(b) 4

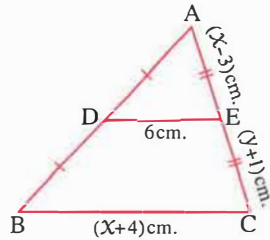
(c) 8

(d) 16

(15) In the opposite figure :

D is midpoint of $\overline{AB}$, E is midpoint of $\overline{AC}$, $DE = 6$ cm.
 , $BC = x + 4$ cm. , $AE = x - 3$ cm. , $EC = 1 + y$ cm.
 , then $\frac{y}{x} = \dots\dots\dots$

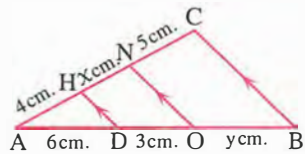
- (a) 3 : 4
- (b) 3 : 5
- (c) 2 : 1
- (d) 1 : 2



(16) In the opposite figure :

$\overline{HD} \parallel \overline{NO} \parallel \overline{CB}$, $AD = 6$ cm. , $AH = 4$ cm.
 , $OD = 3$ cm. , $CN = 5$ cm. , $BO = y$ cm. and $HN = x$ cm.
 , then $x + y = \dots\dots\dots$ cm.

- (a) 9.5
- (b) 7.5
- (c) 8.5
- (d) 10



(17) The solution set of the inequality : $-x(x+2) \geq 0$ in $\mathbb{R}$ is $\dots\dots\dots$

- (a) $\{0, -2\}$
- (b) $[-2, 0]$
- (c) $]-2, 0[$
- (d) $[-2, 2]$

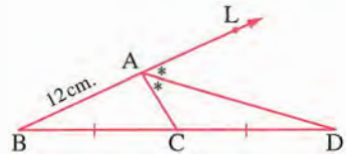
(18) The function $f(x) = x^2 - 9$ is negative at $x \in \dots\dots\dots$

- (a) $\mathbb{R} - [-3, 4]$
- (b) $]-3, 3[$
- (c) $]-\infty, 9[$
- (d) $]-\infty, 3[$

(19) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle LAC$, C is midpoint of $\overline{BD}$
 , $AB = 12$ cm.
 , then $AC = \dots\dots\dots$ cm.

- (a) 3
- (b) 4
- (c) 6
- (d) 8



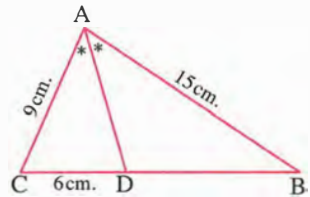
(20) The function $f : [-3, 8] \rightarrow \mathbb{R}$ where $f(x) = 8 - 2x$ has a positive sign in the interval $\dots\dots\dots$

- (a) $]-3, 4]$
- (b) $]4, 8[$
- (c) $[-3, 4[$
- (d) $[4, 8[$

(21) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle A$, $AC = 9$ cm.
 $AB = 15$ cm. , $CD = 6$ cm.
 , then $AD = \dots\dots\dots$ cm.

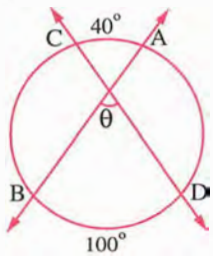
- (a) $5\sqrt{3}$
- (b) 5
- (c) 3



(22) In the opposite figure :

$\theta = \dots\dots\dots^\circ$

- (a) 50
- (b) 60
- (c) 70
- (d) 140



(23) If L, M are the two roots of the equation : $x^2 - 2x + 3 = 0$, then the quadratic equation whose roots are $L + 2, M + 2$ is

(a) $x^2 - 2x + 4 = 0$

(b) $x^2 - 6x = -11$

(c) $x^2 - 2x - 4 = 0$

(d) $x^2 - 6x - 11 = 0$

(24) If $P_M(A) = 81$ and $\overline{AB}$ is a tangent to the circle M , then $AB = \dots\dots\dots$ cm.

(a) 18

(b) 9

(c) 6

(d) 36

(25) If $2 \cos (90^\circ + \theta) = 1$, where θ is the smallest positive angle , then $\theta = \dots\dots\dots^\circ$

(a) 150

(b) 210

(c) 240

(d) 330

(26) In the opposite figure :

$m(\angle A) = 90^\circ$, $\overline{AD} \perp \overline{CD}$, $AC = x$ cm.

, $AB = y$ cm. , $BD = 9$ cm. , $CD = 16$ cm.

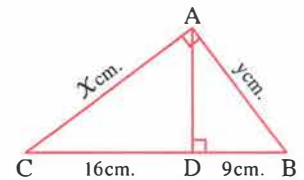
, then $x - y = \dots\dots\dots$ cm.

(a) 3

(b) 4

(c) 5

(d) 6



(27) The range of the function f , where : $f(x) = a \sin(x)$, and $x \in [0, 2\pi]$ is $[-5, 5]$, then $a \in \dots\dots\dots$

(a) $\{5\}$

(b) $\{-5\}$

(c) $]-5, 5[$

(d) $\{-5, 5\}$

Second Essay questions

Answer the following questions :

1 Determine the sign of the function : $f(x) = (2x - 3)^2$, then represent your answer on the number line.

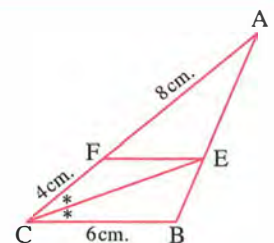
2 In the opposite figure :

$AF = 8$ cm. , $FC = 4$ cm.

, $CB = 6$ cm.

, $\overrightarrow{CE}$ bisects $\angle C$

Prove that : $\overline{FE} \parallel \overline{CB}$




First Multiple choice questions

Choose the correct answer from those given :

(1) $(-4i)(-6i) = \dots\dots\dots$

(a) -24

(b) $-10i$

(c) $-24i$

(d) $24i$

(2) If the two roots of the equation : $kx^2 - 8x + 16 = 0$ are complex and non-real , then

(a) $k > 2$

(b) $k < 2$

(c) $k \in]1, 10[$

(d) $k > 1$

(3) If one of the two roots of the equation : $x^2 - (b-3)x + 5 = 0$ is the additive inverse of the other root , then $b = \dots\dots\dots$

(a) -5

(b) 5

(c) -3

(d) 3

(4) The quadratic equation whose roots are $2i, -2i$ is

(a) $x^2 + 4 = 0$

(b) $x^2 - 4 = 0$

(c) $x^2 = 4i$

(d) $x^2 + 4i = 0$

(5) The sign of the function $f : f(x) = x^2 - 5x + 6$ is positive at

(a) $\mathbb{R} -]2, 3[$

(b) $[2, 3]$

(c) $]2, 3[$

(d) $\mathbb{R} - [2, 3]$

(6) The solution set of the inequality : $x^2 - 7x + 10 < 0$ in $\mathbb{R}$ is

(a) $]2, 5[$

(b) $\mathbb{R} - [2, 5]$

(c) $[-2, 5]$

(d) $\mathbb{R} -]2, 5[$

(7) The sign of the function $f : f(x) = 5x$ is negative at

(a) $]5, \infty[$

(b) $]-\infty, 0[$

(c) $]-5, \infty[$

(d) $]-\infty, 0]$

(8) L, M are two roots of the equation : $x^2 - 3x - 5 = 0$, then $L^2 M^2 = \dots\dots\dots$

(a) 25

(b) -25

(c) 9

(d) -9

(9) The measure of the central angle in a circle of radius length 15 cm. and opposite to an arc of length 5π cm. equal

(a) 30°

(b) 90°

(c) 60°

(d) 180°

(10) The angle of measure (-850°) lies in the quadrant.

(a) first

(b) second

(c) third

(d) fourth

(11) In the opposite figure :

If $AD = 5$ cm. , $AH = 4$ cm.

, $HC = 6$ cm.

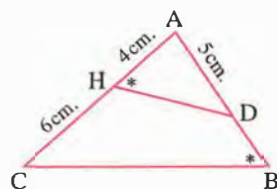
, then $BD = \dots\dots\dots$ cm.

(a) 8

(b) 12.5

(c) 3

(d) 7.5



(12) If $\cos \theta = \frac{1}{2}$, $\sin \theta = -\frac{\sqrt{3}}{2}$, then $\tan \theta = \dots\dots\dots$

- (a) $-\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $-\frac{1}{\sqrt{3}}$ (d) $-\sqrt{3}$

(13) If $\tan (4 \theta) = \cot (2 \theta)$, where $\theta \in \left[0, \frac{\pi}{6}\right]$, then $\cos (-3 \theta) = \dots\dots\dots$

- (a) -1 (b) $\frac{1}{\sqrt{2}}$ (c) 1 (d) $\sqrt{2}$

(14) The range of the function $f : f(x) = 4 \sin 5 \theta$ where $\theta \in \mathbb{R}$ is $\dots\dots\dots$

- (a) $\left[-\frac{1}{5}, \frac{1}{5}\right]$ (b) $[-1, 1]$ (c) $[-4, 4]$ (d) $[-5, 5]$

(15) If the terminal side of the angle θ in its standard position, cuts the unit circle at point $\left(\frac{3}{5}, y\right)$ where $y > 0$, then $\tan (\theta) = \dots\dots\dots$

- (a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) 1 (d) $-\frac{4}{5}$

(16) Two similar polygons, the ratio between their corresponding sides equal $2 : 3$, then the ratio between the lengths of their perimeters is $\dots\dots\dots$ cm.

- (a) $2 : 3$ (b) $1 : 3$ (c) $3 : 2$ (d) $4 : 9$

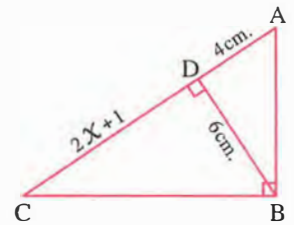
(17) In the opposite figure :

ΔABC is right at B , $\overline{BD} \perp \overline{AC}$

, $AD = 4$ cm. , $BD = 6$ cm.

, $DC = (2x + 1)$ cm.

, then the value of $x = \dots\dots\dots$ cm.



- (a) 9 (b) 4 (c) 2.5 (d) 1

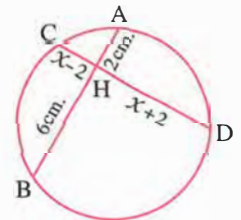
(18) In the opposite figure :

If $AH = 2$ cm. , $BH = 6$ cm.

, $HC = (x - 2)$ cm.

, $HD = (x + 2)$ cm.

, then $x = \dots\dots\dots$ cm.



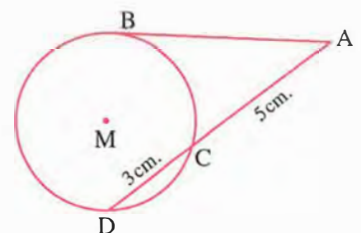
- (a) 2 (b) 3 (c) 4 (d) 5

(19) In the opposite figure :

If $\overrightarrow{AB}$ is a tangent to the circle M at B

, $AC = 5$ cm. $DC = 3$ cm.

, then $AB = \dots\dots\dots$ cm.



- (a) 15 (b) 40
(c) $10\sqrt{2}$ (d) $2\sqrt{10}$

(20) In the opposite figure :

$$\overline{DE} \parallel \overline{BC}, \frac{DE}{BC} = \frac{3}{8}$$

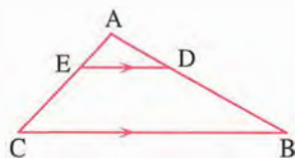
, $AD : DB = \dots\dots\dots$:

(a) 8 : 3

(b) 5 : 3

(c) 3 : 5

(d) 11 : 8



(21) In the opposite figure :

$$\overline{AB} \parallel \overline{CD}, AM = 2.5 \text{ cm.}$$

, $BM = 2 \text{ cm.}$, $MD = 6 \text{ cm.}$

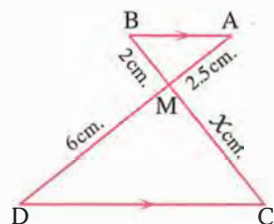
, then $x = \dots\dots\dots$

(a) 4.8

(b) 4

(c) 4.2

(d) 3.6



(22) If $P_M(A) = r$, then the point A lies

(a) outside the circle.

(b) inside the circle.

(c) on the circle.

(d) on the center of the circle.

(23) In the opposite figure :

$$\overline{BC} \parallel \overline{ON} \parallel \overline{DH}, AD = 6 \text{ cm.}$$

, $DO = 3 \text{ cm.}$, $OB = y \text{ cm.}$

, $AH = 4 \text{ cm.}$, $HN = x \text{ cm.}$, $NC = 5 \text{ cm.}$

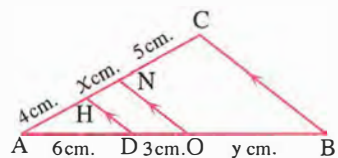
, then $x + y = \dots\dots\dots \text{ cm.}$

(a) 7.5

(b) 9.5

(c) 8.5

(d) 10



(24) In the opposite figure :

If the area of $\triangle ADH = 24 \text{ cm}^2$

, $\overline{DH} \parallel \overline{BC}$, $DH = 2 \text{ cm.}$, $BC = 5 \text{ cm.}$

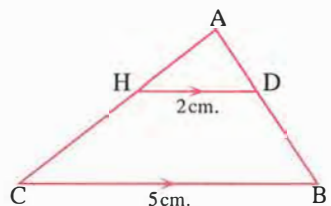
, then the area of $\triangle ABC = \dots\dots\dots \text{ cm}^2$

(a) 36

(b) 100

(c) 126

(d) 150



(25) In the opposite figure :

If $\overrightarrow{AD}$ bisects $\angle BAC$, $AC = 20 \text{ cm.}$

, $BD = 3 \text{ cm.}$, $DC = 4 \text{ cm.}$

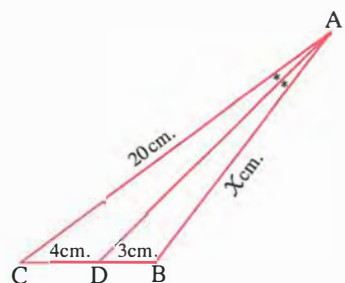
, then $x = \dots\dots\dots \text{ cm.}$

(a) 3

(b) 7

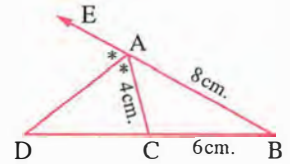
(c) 15

(d) 24



(26) In the opposite figure :

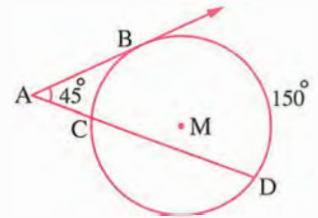
If $\overrightarrow{AD}$ exterior bisector , $AC = 4$ cm.
 , $BC = 6$ cm. , $AB = 8$ cm.
 , then $DC = \dots\dots\dots$ cm.



- (a) 2 (b) 4
 (c) 6 (d) 8

(27) In the opposite figure :

If $\overrightarrow{AB}$ is a tangent to the circle M at B
 , $m(\angle A) = 45^\circ$, $m(\widehat{BD}) = 150^\circ$
 , then $m(\widehat{BC}) = \dots\dots\dots^\circ$



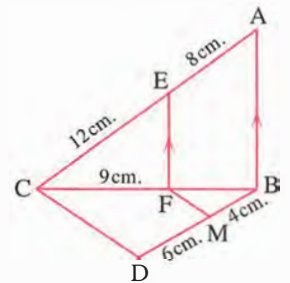
- (a) 60 (b) 90
 (c) 120 (d) 180

Second Essay questions

Answer the following questions :

1 In the opposite figure :

$\overline{AB} \parallel \overline{EF}$, $AE = 8$ cm.
 , $CE = 12$ cm. , $CF = 9$ cm.
 , $BM = 4$ cm. and $DM = 6$ cm.



- (1) Find length of : $\overline{BF}$
 (2) Prove that : $\overline{FM} \parallel \overline{CD}$

2 Find in $\mathbb{R}$ the solution set of the inequality : $x^2 + 2x - 8 > 0$

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First Multiple choice questions

Choose the correct answer from those given :

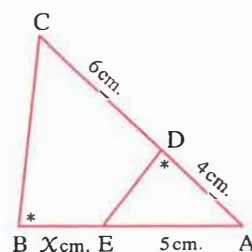
- (1) $i^{41} = \dots\dots\dots$
 (a) i (b) 1 (c) -i (d) -1
 (2) If one of the two roots of the equation : $x^2 - (5m - 15)x + L = 0$ is the additive inverse of the other , then $m = \dots\dots\dots$
 (a) 3 (b) 5 (c) -3 (d) -5

- (3) The angle of measure (-100°) lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- (4) If $\sin X = 0.6$, then $\sin (180^\circ + X) =$
 (a) 0.6 (b) -0.6 (c) 0.8 (d) -0.8
- (5) If L and M are the roots of the equation : $X^2 + 7X + 6 = 0$, then $L^2 + M^2 =$
 (a) 13 (b) 14 (c) 37 (d) 49
- (6) $f(X) = 2 - X$, then $f(X)$ is negative when
 (a) $X < 2$ (b) $X > 2$ (c) $X \geq -2$ (d) $X \leq -2$
- (7) An inscribed angle of measure 45° subtend an arc, its length 3π unit length, then radius length $r =$ unit.
 (a) 3 (b) 6 (c) 9 (d) 12
- (8) The maximum value of $f(X) = 3 \sin 5X + 4$ is
 (a) 3 (b) 4 (c) 7 (d) 9
- (9) The quadratic equation of roots 3 and 5 is
 (a) $X^2 + 8X + 15 = 0$ (b) $X^2 - 8X - 15 = 0$
 (c) $2X^2 - 16X + 30 = 0$ (d) $X^2 = 15$
- (10) If the roots of the equation : $X^2 + 6X + c = 0$ are equal, then $c =$
 (a) -9 (b) -6 (c) 6 (d) 9
- (11) The solution set of the equation : $(X - 2)^2 + (X - 2)^4 = 0$ in $\mathbb{R}$ is
 (a) $\{2\}$ (b) $\{4\}$ (c) $\{2, 4\}$ (d) $\emptyset$
- (12) $(1 + i)(1 + i^2)(1 + i^3)(1 + i^4) =$
 (a) 0 (b) 1 (c) i (d) $8i$
- (13) If $\sin X = \cos 2X$, $X \in$ first quadrant, then $\tan (3X) =$
 (a) 1 (b) zero (c) 2 (d) undefined.
- (14) If X is a quadrantal angle, its terminal side pass through the point (ℓ, m) , then $\ell m =$
 (a) 0 (b) 1 (c) 2 (d) 3
- (15) Two similar triangles, the ratio between their two corresponding sides is $3 : 5$, the perimeter of the greater is 15 cm., then the perimeter of the smaller = cm.
 (a) 6 (b) 9 (c) 25 (d) 35

(16) In the opposite figure :

$m(\angle ADE) = m(\angle B)$
 , then $X =$ cm.

- (a) 2 (b) 3
 (c) 4 (d) 5



(17) In the opposite figure :

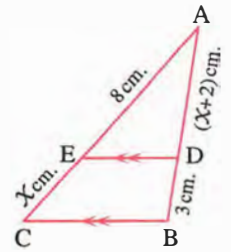
$x = \dots\dots\dots$

(a) 6

(b) 5

(c) 4

(d) 2



(18) In the opposite figure :

$AD = 3$ cm. , $AE = 4$ cm. , $DB = 5$ cm.

, $EC = 2$ cm. , $CB = 12$ cm.

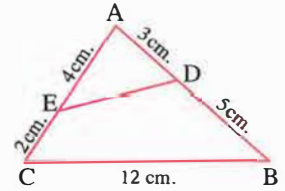
, then $ED = \dots\dots\dots$ cm.

(a) 4

(b) 5

(c) 6

(d) 8



(19) In the opposite figure :

$\overrightarrow{MC}$ is a tangent , $MC = 10$ cm. , $AB = 15$ cm.

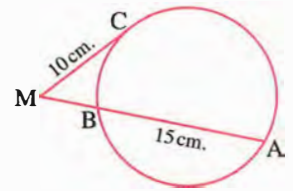
, then $MB = \dots\dots\dots$ cm.

(a) 5

(b) 8

(c) 15

(d) 20



(20) In the opposite figure :

$\overline{AB}$ is a diameter in the circle , $AE = EM$

, $ED = 3$ cm. , $EC = 4$ cm.

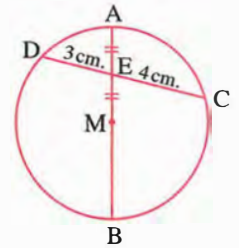
, then the circumference = $\dots\dots\dots$ cm.

(a) 4π

(b) 8π

(c) 16π

(d) 20π



(21) In the opposite figure :

$\overline{AD} \perp \overline{BC}$, $BD = 16$ cm.

, $CD = 9$ cm.

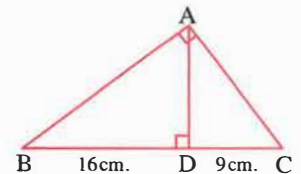
, then $\frac{AB}{AC} = \dots\dots\dots$

(a) $\frac{4}{3}$

(b) $\frac{3}{4}$

(c) $\frac{16}{9}$

(d) 2



(22) In the opposite figure :

$\overline{AD} \parallel \overline{BE} \parallel \overline{CO}$, $AB = 6$ cm. , $BC = 10$ cm.

, $OE = 2x$ cm. , $ED = x + 1$ cm.

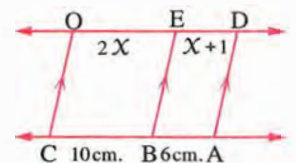
, then $x = \dots\dots\dots$ cm.

(a) 3

(b) 4

(c) 5

(d) 8



(23) In the opposite figure :

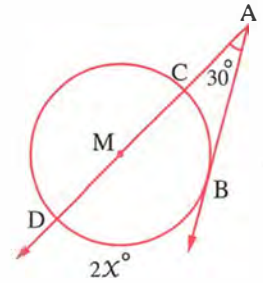
$m(\angle A) = 30^\circ$, $m(\widehat{BD}) = 2x^\circ$
 , then $x = \dots\dots\dots^\circ$

(a) 30

(b) 40

(c) 60

(d) 75



(24) In the opposite figure :

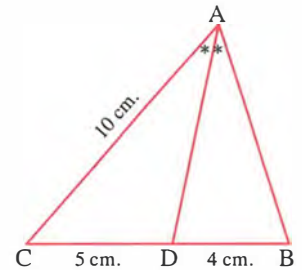
$\overrightarrow{AD}$ bisects $\angle A$, $AC = 10$ cm.
 , $BD = 4$ cm. , $CD = 5$ cm.
 , then $AD = \dots\dots\dots$ cm.

(a) 8

(b) 60

(c) $\sqrt{15}$

(d) $2\sqrt{15}$



(25) In the opposite figure :

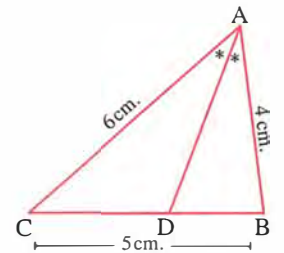
$\overrightarrow{AD}$ bisects $\angle A$
 , $AB = 4$ cm. , $AC = 6$ cm.
 , then $DC = \dots\dots\dots$ cm.

(a) 1

(b) 2

(c) 3

(d) 4



(26) M is a circle , A is a point on the plane of the circle , $MA = 6$ cm. , $P_M(A) = -12$, then the area of the circle = $\dots\dots\dots$ cm^2

(a) 4π

(b) 6π

(c) 36π

(d) 48π

(27) In the opposite figure :

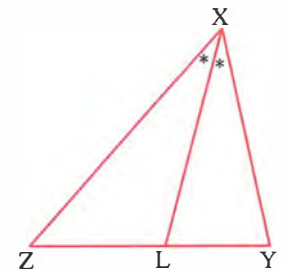
$\overrightarrow{XL}$ bisects $\angle X$, $LY : LZ = 3 : 5$
 , then area of $(\triangle XYL) : \text{area of } (\triangle XLZ) = \dots\dots\dots$

(a) $3 : 5$

(b) $5 : 3$

(c) $9 : 25$

(d) $25 : 9$



Second Essay questions

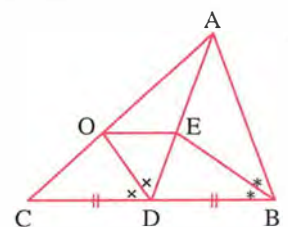
Answer the following questions :

1 Determine the sign of the function : $f(x) = x^2 - x - 6$ in the interval $[-5, 5]$

2 In the opposite figure :

$AB = AD$, $BD = DC$
 , $\overrightarrow{BE}$ bisects $\angle ABD$
 , $\overrightarrow{DO}$ bisects $\angle ADC$

Prove that : $\overline{EO} \parallel \overline{DC}$



14**Beni Suf Governorate****Beni Suf Directorate****First Multiple choice questions****Choose the correct answer from those given :**

- (1) If the curve of the quadratic function f intersects the X -axis at the two points $(5, 0)$ and $(-1, 0)$, then the solution set of the equation $f(X) = 0$ in $\mathbb{R}$ is
- (a) $\{5, 0\}$ (b) $\{-1, 0\}$ (c) $\{-1, 5\}$ (d) $\{-5, 1\}$
- (2) $i^{-30} = \dots\dots\dots$
- (a) $-i$ (b) i (c) -1 (d) 1
- (3) $(3 + 2i) + (2 - 5i) = \dots\dots\dots$
- (a) $5 + 2i$ (b) $5 - 3i$ (c) $3 - 5i$ (d) $5 + 3i$
- (4) If the two roots of the equation : $X^2 - 6X + k = 0$ are equal real roots, then $k = \dots\dots\dots$
- (a) 1 (b) 6 (c) 9 (d) 12
- (5) The two roots of the equation : $X(X - 2) = 5$ are
- (a) two complex and non real roots. (b) two equal real roots.
(c) two different real roots. (d) 2 and zero.
- (6) The function $f : f(X) = X^2 - 6X + 9$ is positive in the interval
- (a) $]0, \infty[$ (b) $] - \infty, 3]$ (c) $\mathbb{R} - \{0\}$ (d) $\mathbb{R} - \{3\}$
- (7) The solution set of the inequality : $X(X - 1) > 0$ in $\mathbb{R}$ is
- (a) $\{0, 1\}$ (b) $]0, 1[$ (c) $[0, 1]$ (d) $\mathbb{R} - [0, 1]$
- (8) The sign of the function $f : f(X) = 6 - 2X$ is non positive at
- (a) $X > 3$ (b) $X \leq 3$ (c) $X < 3$ (d) $X \geq 3$
- (9) The angle whose measure is -135° lies in the quadrant.
- (a) first (b) second (c) third (d) fourth
- (10) The measure of the central angle in a circle of radius length 15 cm. and opposite to an arc of length 5π cm. equals
- (a) 30° (b) 60° (c) 90° (d) 180°
- (11) If $\cos \theta = \frac{1}{2}$, $\sin \theta = \frac{\sqrt{3}}{2}$, then the measure of angle $\theta = \dots\dots\dots$
- (a) $\frac{\pi}{3}$ (b) $\frac{5\pi}{6}$ (c) $\frac{5\pi}{3}$ (d) $\frac{11\pi}{6}$
- (12) If $\sin(90^\circ - \theta) = \frac{-1}{2}$ where θ is the smallest positive angle, then $\theta = \dots\dots\dots$
- (a) 60° (b) 120° (c) 240° (d) 300°

(13) The range of the function $f : f(\theta) = \sin \theta$ is

- (a) $\{-1, 1\}$ (b) $[-1, 1]$ (c) $]-1, 1[$ (d) $]-\infty, \infty[$

(14) If $\cos \theta = 0.436$, where θ is the measure of the smallest positive angle, then $\theta \approx$

- (a) $64^\circ 9'$ (b) $115^\circ 51'$ (c) $244^\circ 9'$ (d) $295^\circ 51'$

(15) The two similar polygons are congruent if the scale factor k satisfies

- (a) $k = \frac{1}{2}$ (b) $k = 1$ (c) $k > 1$ (d) $0 < k < 1$

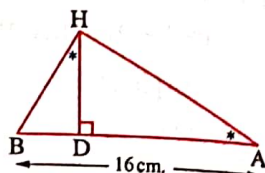
(16) In the opposite figure :

$\triangle ABH$ is a triangle, $\overline{HD} \perp \overline{AB}$, $m(\angle A) = m(\angle BHD)$

, $AB = 16$ cm. and $BD = 4$ cm.

, then the length of $\overline{BH} =$ cm.

- (a) 4 (b) 8 (c) 12 (d) $8\sqrt{3}$



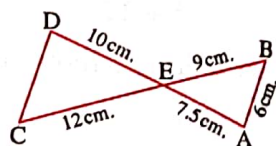
(17) In the opposite figure :

$\overline{AD} \cap \overline{BC} = \{E\}$, $AE = 7.5$ cm., $EC = 12$ cm.

, $BE = 9$ cm., $ED = 10$ cm. and $AB = 6$ cm.

, then the length of $\overline{CD} =$ cm.

- (a) 4 (b) 8 (c) 12 (d) 16



(18) If the ratio between the surface areas of two similar polygons is $16 : 25$, then the ratio between their perimeter is

- (a) $2 : 5$ (b) $4 : 5$ (c) $16 : 41$ (d) $16 : 25$

(19) If $\triangle ABC \sim \triangle DEF$, area of $(\triangle ABC) = 9$ area of $(\triangle DEF)$ and $DE = 4$ cm.

, then $AB =$ cm.

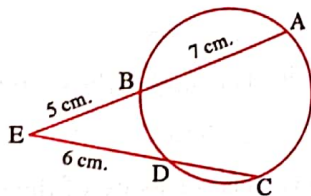
- (a) $\frac{4}{3}$ (b) 9 (c) 12 (d) 36

(20) In the opposite figure :

If $AB = 7$ cm., $BE = 5$ cm., $DE = 6$ cm.

, then $CD =$ cm.

- (a) 3 (b) 4
(c) 5 (d) 6



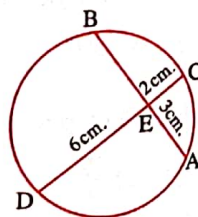
(21) In the opposite figure :

$\overline{CD} \cap \overline{AB} = \{E\}$, $EC = 2$ cm.

, $DE = 6$ cm., $AE = 3$ cm.

, then $BE =$ cm.

- (a) 5 (b) 3
(c) 4 (d) 6



(22) In the opposite figure :

$$\overline{AB} \parallel \overline{DE}, \overline{DB} \cap \overline{EA} = \{C\}$$

, $AC = 6$ cm. , $BC = 4$ cm. and $CD = 3$ cm.

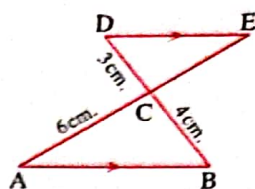
, then $CE = \dots\dots\dots$ cm.

(a) 3.5

(c) 4.5

(b) 4

(d) 5



(23) In the opposite figure :

$$\overline{CD} \parallel \overline{EF} \parallel \overline{XY}, DF = 15$$
 cm.

, $FY = 33$ cm. and $CE = 20$ cm.

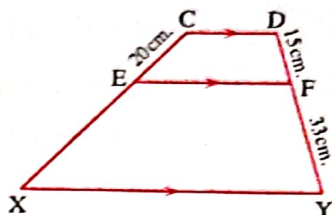
, then $CX = \dots\dots\dots$ cm.

(a) 21

(c) 48

(b) 44

(d) 64



(24) In the opposite figure :

$\overline{AD}$ bisects the exterior angle of $\triangle ABC$ at A

, $AB = 8$ cm. , $CB = 6$ cm. and $AC = 4$ cm.

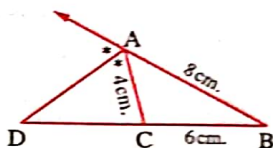
, then $CD = \dots\dots\dots$ cm.

(a) 2

(b) 4

(c) 6

(d) 8



(25) If M is a circle , A is a point that lies in its plane where $P_M(A) = 0$, then A lies

(a) inside the circle.

(c) outside the circle.

(b) on the center of the circle.

(d) on the circle.

(26) If N is a circle of diameter length 16 cm. , B is a point lies in its plane where $NB = 5$ cm.

, then $P_N(B) = \dots\dots\dots$

(a) - 231

(b) - 39

(c) $\sqrt{39}$

(d) 39

(27) In the opposite figure :

$\overline{AB}$ is a tangent to a circle at B

, $m(\widehat{BD}) = 120^\circ$ and $m(\widehat{BC}) = 60^\circ$

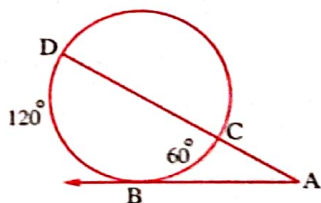
, then $m(\angle BAD) = \dots\dots\dots$

(a) 15°

(c) 60°

(b) 30°

(d) 90°



Second Essay questions

Answer the following questions :

1 If L and M are the two roots of the equation : $x^2 - 3x - 5 = 0$, then find the quadratic equation whose roots are : $L - 4$ and $M - 4$

- 2** ABC is a triangle in which : $AB = 15$ cm. , $AC = 9$ cm. , $\overrightarrow{AD}$ bisects $\angle BAC$ and intersects $\overline{CB}$ at D , if $CD = 6$ cm. Find the length of each of $\overline{DB}$ and $\overline{AD}$

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Assiut Governorate



Administration of Distinguished and Governmental Language School

First Multiple choice questions

Choose the correct answer from those given :

- (1) If the two roots of the equation : $4x^2 - 12x + c = 0$ are equal , then $c = \dots\dots\dots$
 (a) 3 (b) 4 (c) 9 (d) 16
- (2) The simplest form of the $\tan(360^\circ + \theta) + \cot(270^\circ - \theta) = \dots\dots\dots$
 (a) zero (b) 2 (c) $2 \tan \theta$ (d) $2 \cot \theta$
- (3) The quadratic equation whose roots are : i , $-i$ is $\dots\dots\dots$
 (a) $x^2 - 1 = 0$ (b) $x^2 + 1 = 0$ (c) $(x + 1)^2 = 0$ (d) $(x - 1)^2 = 0$
- (4) If $\cos \theta > 0$, $\sin \theta < 0$, then θ lies in the $\dots\dots\dots$ quadrant.
 (a) first (b) second (c) third (d) fourth.
- (5) If one of the roots of the equation : $x^2 - (m + 2)x + 3 = 0$ is additive inverse of the other , then $m = \dots\dots\dots$
 (a) -3 (b) -2 (c) 2 (d) 3
- (6) The function $f : f(x) = -3$ is negative in $\dots\dots\dots$
 (a) $]-\infty, -3[$ (b) $]-3, 3]$ (c) $]-\infty, \infty[$ (d) $]-\infty, 0[$
- (7) If polygon ABCD $\sim$ polygon XYZL , then $\frac{AB}{BC} = \dots\dots\dots$
 (a) $\frac{XZ}{XL}$ (b) $\frac{AD}{XL}$ (c) $\frac{XL}{AD}$ (d) $\frac{XY}{YZ}$
- (8) The ratio between the perimeters of two similar polygons is 4 : 9 , so the ratio between their areas is $\dots\dots\dots$
 (a) 4 : 9 (b) 9 : 4 (c) 2 : 3 (d) 16 : 81
- (9) The solution set of inequality : $(x - 2)(x - 5) < 0$ in $\mathbb{R}$ is $\dots\dots\dots$
 (a) $\{2, 5\}$ (b) $]2, 5[$ (c) $[2, 5]$ (d) $\mathbb{R} - [2, 5]$
- (10) All $\dots\dots\dots$ are similar.
 (a) triangles (b) rectangles. (c) parallelograms (d) squares
- (11) All of the following are measures of angles that lie in the second quadrant except $\dots\dots\dots$
 (a) -210 (b) 120° (c) -120° (d) 850°

(12) $\sqrt{-2} \times \sqrt{-8} = \dots\dots\dots$

- (a) 4 (b) -4 (c) 4i (d) -16

(13) The radian measure of the angle whose measure is 120° in terms of π is $\dots\dots\dots$

- (a) $\frac{1}{3}\pi$ (b) $\frac{2}{3}\pi$ (c) $\frac{3}{2}\pi$ (d) $\frac{1}{2}\pi$

(14) The exterior bisector of the vertex of an isosceles triangle is $\dots\dots\dots$ to the base.

- (a) parallel (b) perpendicular (c) bisects (d) equal

(15) The solution set of the equation : $x^2 + 9 = 0$ in the set of complex numbers is $\dots\dots\dots$

- (a) $\{3, -3\}$ (b) $\{-3i\}$ (c) $\{3i, -3i\}$ (d) $\emptyset$

(16) If $x = -1$ is one of the two roots of the equation : $x^2 - kx - 6 = 0$, then $k = \dots\dots\dots$

- (a) 5 (b) -5 (c) 6 (d) -6

(17) In the opposite figure :

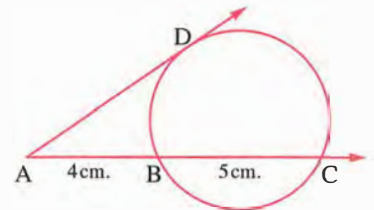
$\overrightarrow{AD}$ is a tangent

, $AB = 4$ cm.

, $BC = 5$ cm.

, then $AD = \dots\dots\dots$ cm.

- (a) $2\sqrt{5}$ (b) 36 (c) 20 (d) 6



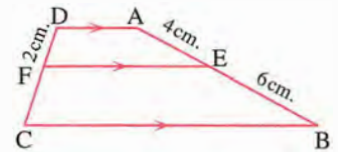
(18) In the opposite figure :

If $\overrightarrow{AD} \parallel \overrightarrow{EF} \parallel \overrightarrow{BC}$, $AE = 4$ cm.

, $EB = 6$ cm. , $DF = 2$ cm.

, then $CF = \dots\dots\dots$ cm.

- (a) 2 (b) 3 (c) 4 (d) 5



(19) If $\overrightarrow{AB}$ is a tangent to the circle M at point B and $P_M(A) = 25 \text{ cm}^2$, then $AB = \dots\dots\dots$

- (a) 5 (b) 10 (c) 15 (d) 25

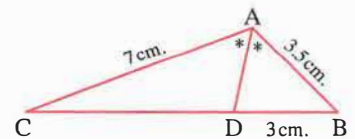
(20) In the opposite figure :

$\overrightarrow{AD}$ bisects $\angle BAC$, $AB = 3.5$ cm.

, $AC = 7$ cm. , $BD = 3$ cm.

, then $CD = \dots\dots\dots$ cm.

- (a) 4.5 (b) 5 (c) 4.9 (d) 6



(21) If $\tan(180^\circ + \theta) = 1$ where θ is the smallest positive angle , then $\theta = \dots\dots\dots$

- (a) 60° (b) 30° (c) 45° (d) 135°

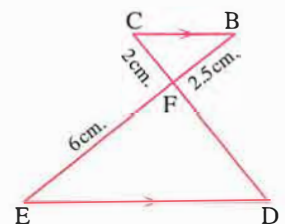
(22) In the opposite figure :

If $\overrightarrow{ED} \parallel \overrightarrow{CB}$, $CF = 2$ cm.

, $BF = 2.5$ cm. , $FE = 6$ cm.

, then $FD = \dots\dots\dots$ cm.

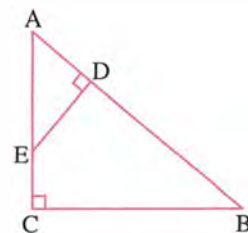
- (a) 3.6 (b) 4 (c) 4.2 (d) 4.8



(23) In the opposite figure :

$\triangle ABC \sim \triangle AED$, $m(\angle ADE) = m(\angle C) = 90^\circ$
 , $m(\angle ABC) = 3x + 10^\circ$, $m(\angle AED) = x + 30^\circ$
 , then $m(\angle A) = \dots\dots\dots$

- (a) 50° (b) 40°
 (c) 30° (d) 60°



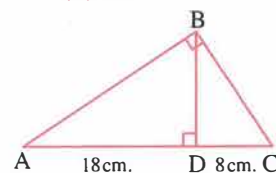
(24) If θ is the measure of an acute angle , $\cos(\theta + 25^\circ) = \sin 30^\circ$, then $\theta = \dots\dots\dots$

- (a) 5° (b) 20° (c) 25° (d) 35°

(25) In the opposite figure :

$m(\angle ABC) = 90^\circ$, $\overline{BD} \perp \overline{AC}$
 , $AD = 18 \text{ cm.}$, $DC = 8 \text{ cm.}$
 , then $BD = \dots\dots\dots \text{ cm.}$

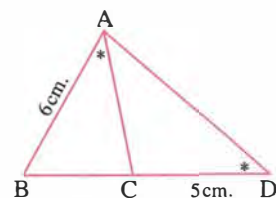
- (a) $12\sqrt{3}$ (b) 24 (c) 12 (d) $8\sqrt{3}$



(26) In the opposite figure :

$m(\angle D) = m(\angle BAC)$, $AB = 6 \text{ cm.}$
 , $CD = 5 \text{ cm.}$
 , then $BC = \dots\dots\dots \text{ cm.}$

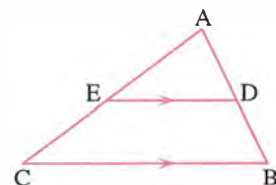
- (a) 3 (b) 4 (c) 5 (d) 6



(27) In the opposite figure :

If $\overline{ED} \parallel \overline{CB}$, $\frac{DE}{BC} = \frac{3}{5}$
 , then $\frac{AD}{DB} = \dots\dots\dots$

- (a) $\frac{5}{3}$ (b) 1.5
 (c) $\frac{2}{3}$ (d) $\frac{3}{4}$



Second Essay questions

Answer the following questions :

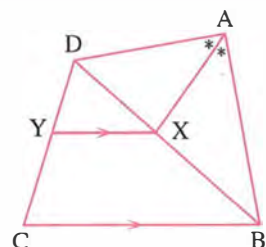
1 If L and M are the two roots of the equation : $x^2 - 3x - 4 = 0$

Find the equation whose roots are : $\frac{1}{L}$ and $\frac{1}{M}$

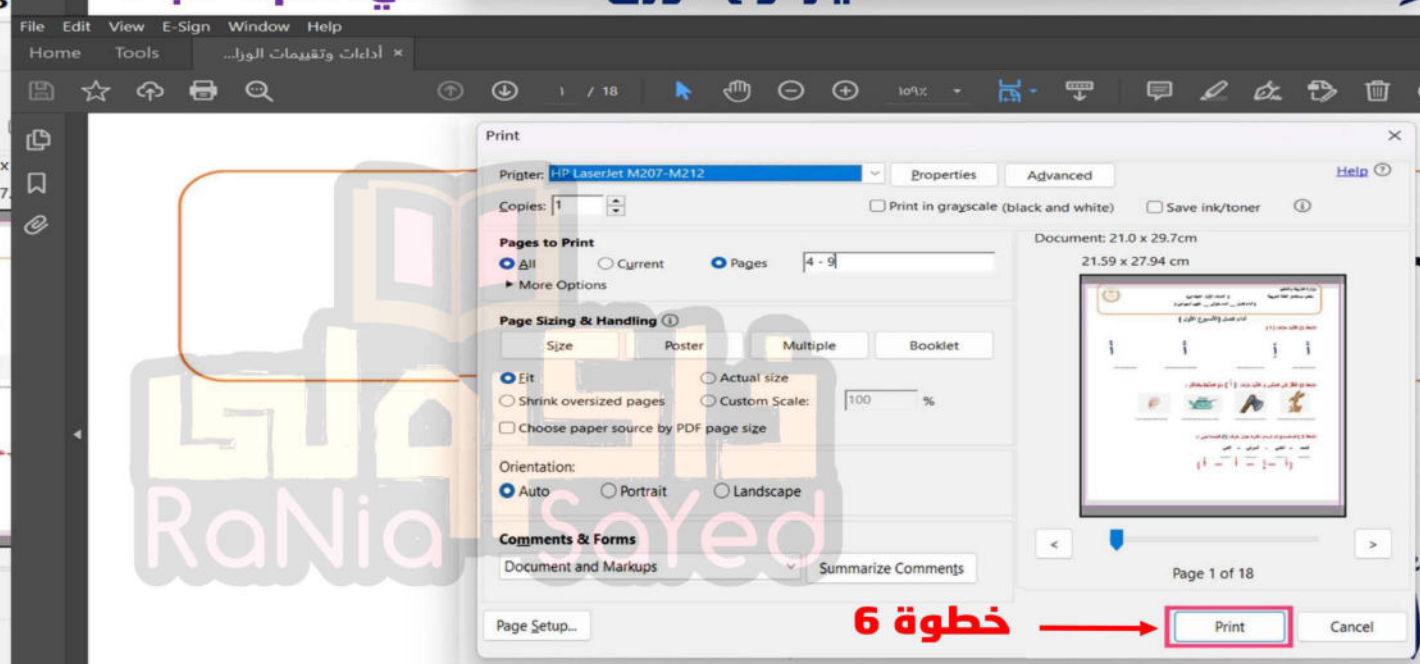
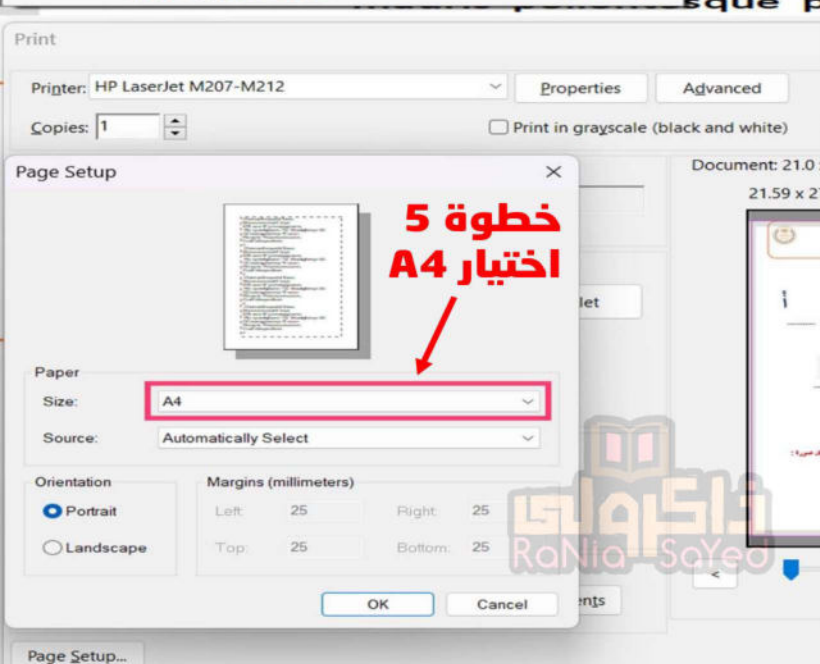
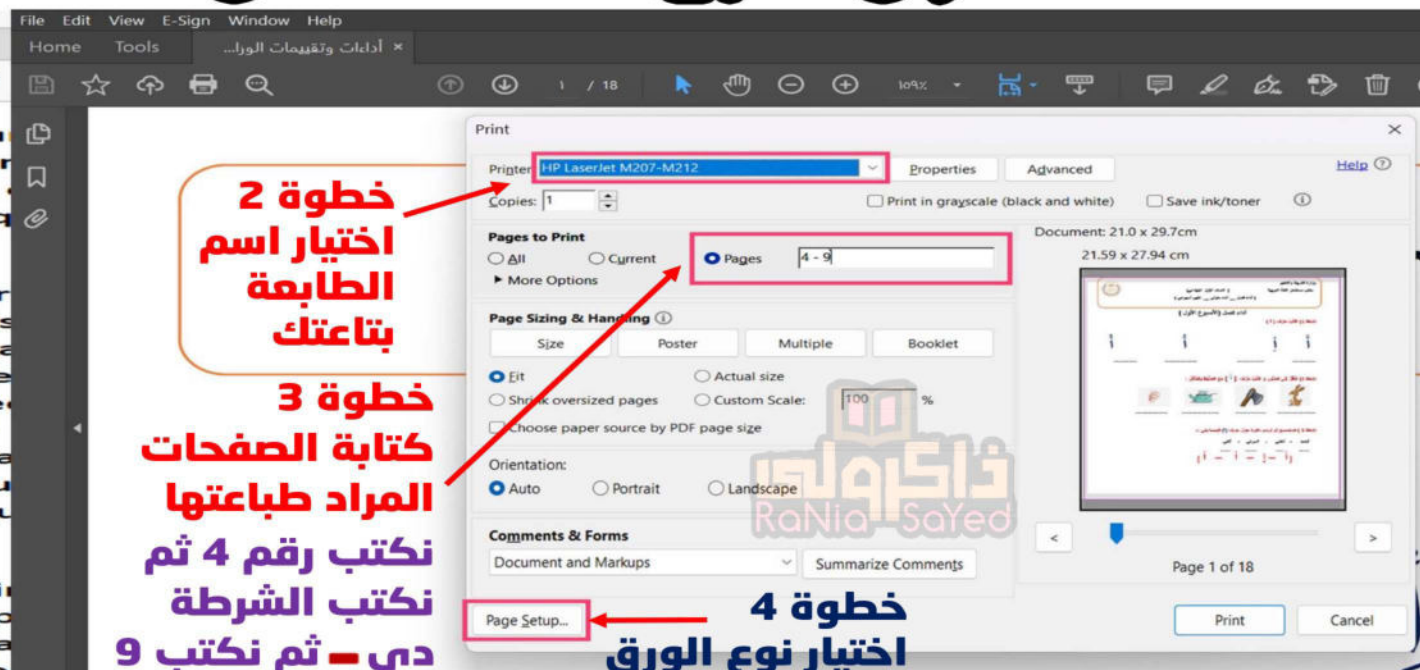
2 In the opposite figure :

ABCD is a quadrilateral
 , $\overrightarrow{AX}$ bisects $\angle BAD$
 and intersects $\overline{BD}$ at X , $\overline{XY} \parallel \overline{BC}$

Prove that : $\frac{DY}{YC} = \frac{DA}{AB}$



كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

امتحانات رقم (2)

الترم الاول



Dakahlia Governorate
Maths supervision

Exam No (1) ☐
1st Sec - Jan. 2024

Subject : Mathematics ☐
Time : 3 Hours



[1] Choose the correct answer:

- (1) If $(1+i^4)(1-i^7) = X + iy$, then $X + y = \dots\dots$
 a) i b) 4 c) 2 d) 1
- (2) The discriminant of the quadratic equation $2X^2 + 5X + 4K = 0$ equal to zero, then the value of $K = \dots\dots$
 a) ± 14 b) Zero c) $\pm \frac{25}{32}$ d) $\frac{25}{32}$
- (3) In the quadratic equation $aX^2 - bX + C = 0$, if the sum of the roots equal the product of them, then $b = \dots\dots\dots$
 a) $-a$ b) a c) $-c$ d) c
- (4) The quadratic equation whose roots are $3, -5$ is $\dots\dots\dots$
 a) $X^2 + 2X - 15 = 0$ c) $X^2 - 2X - 15 = 0$
 b) $X^2 - 2X + 15 = 0$ d) $X^2 + 2X + 15 = 0$
- (5) The sign of the function $F : F(x) = 6 - 2X$ is non-positive at $\dots\dots\dots$
 a) $X > 3$ b) $X \leq 3$ c) $X < 3$ d) $X \geq 3$
- (6) The solution set of the inequality: $X^2 + 49 < 0$ in $\mathcal{R}$ is $\dots\dots\dots$
 a) $\emptyset$ b) $\mathcal{R}$ c) $[-7, 7]$ d) $\mathcal{R} - [-7, 7]$
- (7) All function defined by the following rules are positive on $\mathcal{R}$ except $\dots\dots\dots$
 a) $\mathcal{F}(x) = 3$ c) $\mathcal{F}(x) = X^2 - 3X + 3$
 b) $\mathcal{F}(x) = X + 3$ d) $\mathcal{F}(x) = X^2 + X + 3$
- (8) L, M are two roots of the equation $X^2 - 21X + 4 = 0$, then $\sqrt{L} + \sqrt{M} = \dots\dots\dots$
 a) 25 c) -5
 b) 5 d) ± 5
- (9) A radian measure of a central angle subtends an arc whose length 3 cm. in a circle whose surface area is $16 \text{ cm}^2 = \dots\dots\dots \text{rad}$
 a) 1 b) 1.5 c) 1.75 d) 0.75
- (10) The angle of measure $\frac{31\pi}{6}$ lies in the $\dots\dots\dots$ quadrant
 a) First b) Second c) Third d) Fourth

□

(11) If $\cos \theta > 0$, $\sin \theta = -\frac{\sqrt{3}}{2}$

Then a directed angle θ lies in the quadrant

- a) First b) Second c) Third d) Fourth

(12) If $\sin(2\theta) = \cos(4\theta)$, where θ is a positive acute angle

Then $\tan(90^\circ - 3\theta) = \dots\dots\dots$

- a)
- -1
- b)
- $\frac{1}{\sqrt{3}}$
- c)
- 1
- d)
- $\sqrt{3}$

(13) The range of the function $F : F(x) = \frac{\cos x}{5}$ where $x \in \mathbb{R}$ is

- a)
- $[-\frac{1}{5}, \frac{1}{5}]$
- b)
- $[-1, 1]$
- c)
- $[-5, 5]$
- d)
- $[0, \frac{2}{5}]$

(14) If the terminal side of a directed angle θ in the standard positionintersect the unit circle at $(-\frac{\sqrt{3}}{2}, Y)$ where $Y \in \mathbb{Z}^+$, then $\theta = \dots\dots^\circ$

- a) 30 b) 150 c) 210 d) 330

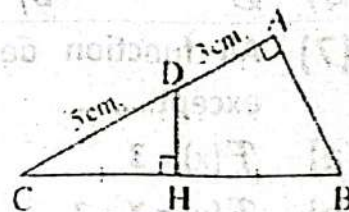
(15) If Two rectangles are similar, the two dimension lengths of the first rectangle are 12 cm., 8 cm. and the perimeter of the second rectangle = 60 cm., then the length of the second rectangle = cm.

- a) 12 b) 18 c) 24 d) 16

(16) In the opposite figure:

AD = 3 cm., DC = 5 cm., H is midpoint of $\overline{BC}$,
then HC = cm = cm

- a)
- $2\sqrt{2}$
-
- b)
- $2\sqrt{5}$
-
- c) 4
-
- d) 5

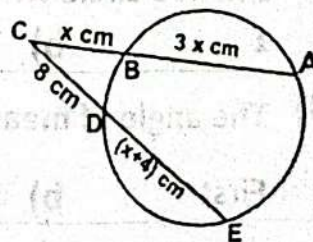
(17) If $\triangle ABC \sim \triangle DEF$, $a(\triangle ABC) = 9 a(\triangle DEF)$ and $DE = 4$ cm, then $AB = \dots\dots$ cm

- a)
- $\frac{4}{3}$
- b) 12 c) 9 d) 36

(18) In the opposite figure:

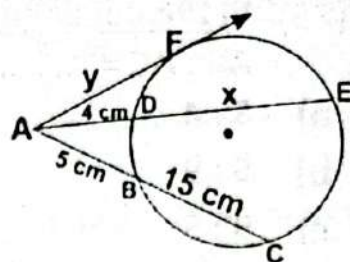
 $X = \dots\dots\dots$ cm

- a) 3
-
- b) 5
-
- c) 6
-
- d) 9



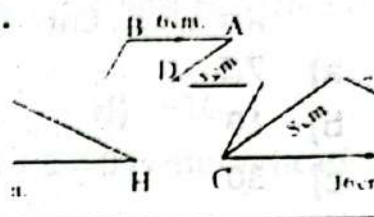
X + Y = cm

- a) 9 c) 22
b) 18 d) 31



, then $\frac{HD}{BC} = \dots$

- a) $\frac{4}{3}$ b) $\frac{2}{3}$
c) $\frac{3}{4}$ d) $\frac{1}{2}$



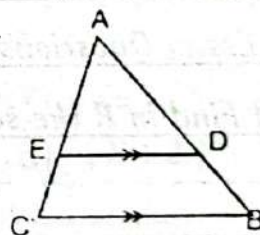
a) 4:9 b) 2:3 c) 16:81 d) 9:4

a) $\frac{AD}{BD} = \frac{AE}{EC}$

c) $\frac{AD}{BD} = \frac{AE}{AC}$

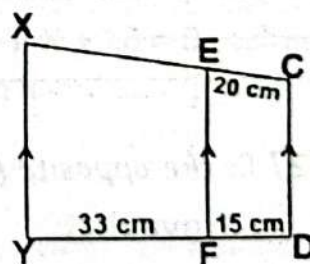
b) $\frac{AD}{BA} = \frac{DE}{BC}$

d) $\frac{AB}{BD} = \frac{AC}{EC}$



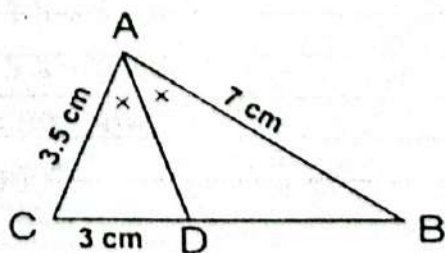
Then $CX = \dots\dots\dots C_m$

- [illegible]



BD = cm

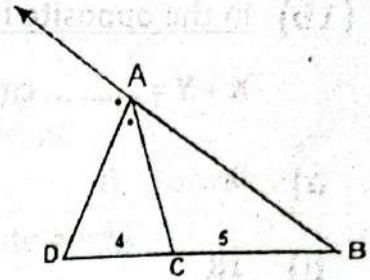
- a) 4.5
b) 5
c) 4.9
d) 6



(25) In the opposite figure:

$AB : AC = \dots\dots\dots$

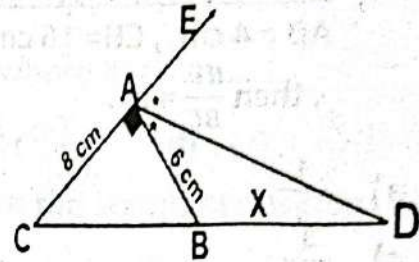
- a) 5 : 4
- b) 5 : 9
- c) 9 : 5
- d) 9 : 4



(26) In the opposite figure:

$X = \dots\dots\dots$ Cm

- a) 7.5
- b) 10
- c) 30
- d) 40



(27) If $P_M(A) = r$, then the point A lies

- a) Outside the circle
- b) Inside the circle
- c) On the circle
- d) On the center of the circle

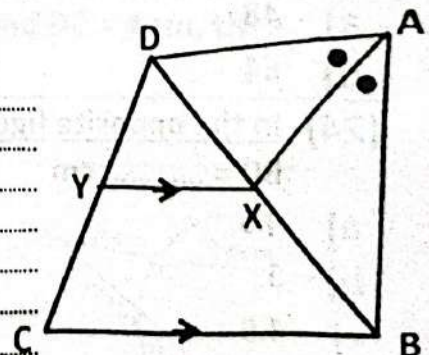
☐ Essay Questions

[1] Find in R the solution set of the inequality:

$$x^2 - 3x - 4 \leq 0$$

[2] In the opposite figure:

Prove that: $\frac{DY}{YC} = \frac{AD}{AB}$



Dakahlia Governorate
Maths supervisionExam No (2) □
1st Sec - Jan. 2024Subject : Mathematics □
Time : 3 Hours[1] Choose the correct answer:

(1) If two roots of the equation: $(X - K)^2 + 4X = 0$ are additive inverse to each other, then $K = \dots\dots$

- a) -2 b) Zero c) 2 d) 4

(2) If the sign of $f(x) = kx - 10$ is positive on $]5, \infty[$ and negative on $] -\infty, 5[$ then $k = \dots\dots$

- a) 5 b) -2 c) 2 d) -10

(3) If one of two roots of the equation: $mX^2 - 3X + 1 = 0$ is multiplicative inverse of the other, then $m = \dots\dots\dots$

- a) -3 b) 1 c) -1 d) 2

(4) If L, M are two roots of the equation: $x^2 - x - 2 = 0$ where $L > M$, then $2L + 5M^2 = \dots\dots\dots$

- a) $X^2 + 2X - 15 = 0$ c) $X^2 - 2X - 15 = 0$
b) $X^2 - 2X + 15 = 0$ d) $X^2 + 2X + 15 = 0$

(5) The function which has a positive sign in $\mathcal{R} - \{2\}$ is $f(x) = \dots\dots\dots$

- a) $(X-2)(X+2)$ b) $X^2 - 4x + 4$ c) $X - 2$ d) $(X+2)^2$

(6) The solution set of the inequality: $X^2 + 49 < 0$ in $\mathcal{R}$ is $\dots\dots\dots$

- a) $\emptyset$ b) $\mathcal{R}$ c) $[-7, 7]$ d) $\mathcal{R} - [-7, 7]$

(7) $(3 + i)$ is one of two roots of the equation: $X^2 + kX + 10 = 0$, where the coefficient of its terms are real number, then $k = \dots\dots\dots$

- a) 6 c) -6
b) 9 d) -9

(8) L, M are two roots of the equation $X^2 - 3X = -5$, then the equation whose two roots $(L + 1), (M + 1)$ is $\dots\dots\dots$

- a) $X^2 - 9X + 5 = 0$ c) $X^2 + 3X + 5 = 0$
b) $X^2 - 5X + 9 = 0$ d) $X^2 - 5X - 3 = 0$

(9) If $\sin(A + 15) = \cos(A + 25)$ where, $0 < A < 90^\circ$, then $A = \dots\dots\dots$

- a) $-\theta$ b) $\theta - 180$ c) $\theta - 360^\circ$ d) 360°

(10) The angle of measure 490° lies in the $\dots\dots\dots$ quadrant

- a) First b) Second c) Third d) Fourth



(11) The central angle with measure 120° and includes an arc with length L cm. in a circle with radius 6 cm. , then $L \approx$ cm.

- a) 12.57 b) 10 c) 125.4 d) 1.254

(12) If the terminal side of the angle θ in its standard position , cuts the unit circle at point $(\frac{3}{5}, y)$ where $y > 0$, then $\tan(\theta) =$

- a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

(13) If $\sin(\theta) = \frac{3}{5}$ where θ is a positive acute angle, then

$$\sin(180 + \theta) \cos(360 - \theta) + \sin(90 + \theta) = \dots\dots\dots$$

- a) $\frac{4}{5}$ b) $\frac{5}{4}$ c) $-\frac{3}{5}$ d) Zero

(14) $\tan 495^\circ =$

- a) 1 b) -1 c) $2\frac{1}{2}$ d) $\frac{1}{2}$

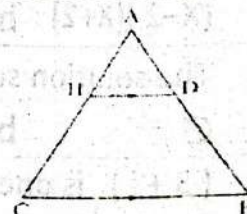
(15) Two similar polygons , the ratio between their areas is 4 : 25 , then the ratio between their perimeters is

- a) 2 : 5 b) 5 : 2 c) 4 : 25 d) 8 : 625

(16) In the opposite figure:

$$\overline{HD} \parallel \overline{BC}, \frac{DH}{BC} = \frac{3}{8}, \text{ then } AD : DB = \dots\dots : \dots\dots$$

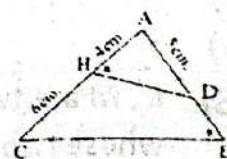
- a) 8 : 3 c) 3 : 5
b) 5 : 3 d) 11 : 8



(17) In the opposite figure:

$$BD = \dots\dots \text{ cm.}$$

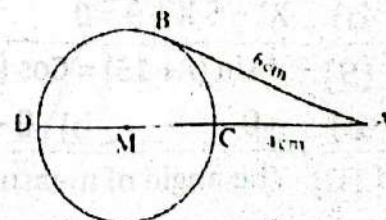
- a) $\frac{4}{3}$ b) 12 c) 9



(18) In the opposite figure:

If $\overline{AB}$ is a tangent to the circle M , then area of the circle = $\pi \text{ cm}^2$

- a) 6.25 c) 10
b) 25 d) 62.5



In the opposite figure:

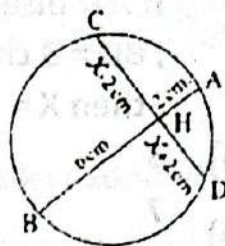
(19) $X = \dots\dots\dots$ cm

a) 6

c) 4

b) 2

d) 10



(20) In the opposite figure:

If the perimeter of the triangle $ABC = 28$ cm.

, $AB = 12$ cm. , $AC = 9$ cm. , $\overline{AD}$ bisects $\angle BAC$

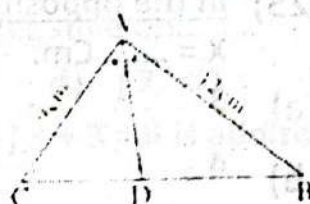
, then $BD \times DC = \dots\dots\dots$ cm^2

a) 9

b) 16

c) 7

d) 12



(21) In the opposite figure:

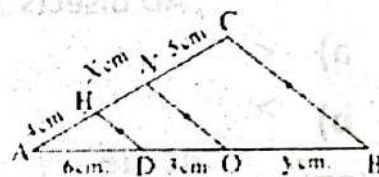
$X + y = \dots\dots\dots$ Cm.

a) 4 : 9

b) 2 : 3

c) 16 : 81

d) 9 : 4



(22) In the opposite figure:

All If the area of triangle $ADH = 24$ cm^2 , $\overline{DH} \parallel \overline{BC}$

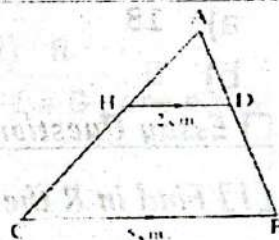
, then the area of the shape $DBCH = \dots\dots\dots$ cm^2

a) 36

c) 136

b) 126

d) 100



(23) In the opposite figure:

$\overline{FH} \parallel \overline{BC}$, $\overline{DH}$ bisects $\angle ADC$

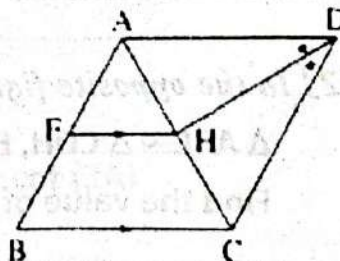
Then $\frac{AF}{FB} = \dots\dots\dots$

a) $\frac{HF}{CB}$

c) $\frac{CD}{DA}$

b) $\frac{CH}{HA}$

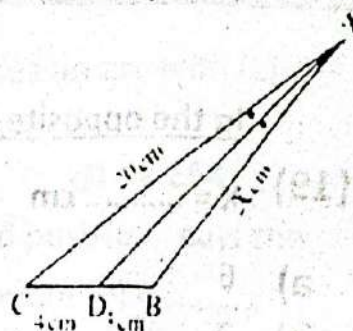
d) $\frac{AD}{DC}$



(24) In the opposite figure:

If $\overline{AD}$ bisects $\angle BAC$, $AC = 20$ cm.
 $BD = 3$ cm., $DC = 4$ cm
 , then $X = \dots\dots\dots$ cm.

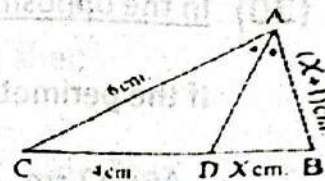
- a) 3 c) 15 c) 15
 b) 7 d) 24 d) 24



(25) In the opposite figure:

$X = \dots\dots\dots$ Cm.

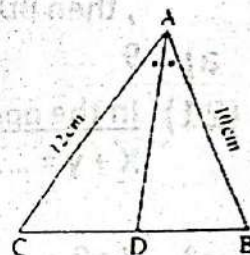
- a) 3 c) 2
 b) 4 d) 1



(26) In the opposite figure:

$\triangle ABC$ in which $AB = 10$ cm., $AC = 12$ cm.
 AD bisects $\angle A$, then $BD \dots\dots\dots DC$

- a) $<$ c) $=$
 b) $>$ d) $\frac{1}{2}$



(27) If $P_M(A) = 81$ and $\overline{AB}$ is a tangent of the circle M , then $AB = \dots\dots\dots$

- a) 18 c) 6
 b) 9 d) 36

Essay Questions

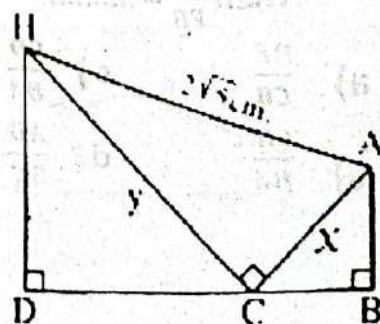
[1] Find in R the solution set of the inequality:

$$x^2 - 5x + 6 \leq 0$$

[2] In the opposite figure:

$\triangle ABC \sim \triangle CDH$, $BC = \frac{1}{2} DH$

Find the value of each X , y ?



Dakahlia Governorate
Maths supervision

Exam No (3) □
1st Sec - Jan. 2024

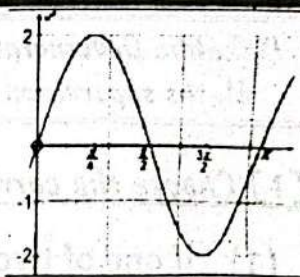
Subject : Mathematics □
Time : 3 Hours



[1] Choose the correct answer:

- (1) If one of two roots of the equation : $X^2 - (2k + 6)X + 3k$ is additive inverse to the other ,then $K = \dots$
 a) -2 b) 0 c) ± 3 d) -3
- (2) If $f : [-2, 4] \rightarrow \mathbb{R}$ the sign of $f(x) = 2x - 4$ is non-negative on.....
 a) $]2, 5[$ b) $[2, \infty[$ c) $[2, 5[$ d) $]2, \infty[$
- (3) If one of two roots of the equation : $x^2 - (M + 2)x + 3 = 0$ is additive inverse of the other , then $m = \dots\dots\dots$
 a) -3 b) 2 c) -2 d) 3
- (4) If l, m are two roots of the equation: $x^2 - 5x - 7 = 0$,then $l^3 + m^3 = \dots\dots\dots$
 a) -238 c) 125
 b) 343 d) 230
- (5) If $4x + 2yi = 8 + 4i$, then $x + y = \dots\dots\dots$
 a) -2 b) 4 c) 9 d) 16
- (6) The solution set of the inequality: $X^2 + 4 > 0$ in $\mathbb{R}$ is
 a) $\emptyset$ b) $] -2, 2[$ c) $\mathbb{R} - [-2, 2]$ d) $\mathbb{R}$
- (7) If the two roots of the equation: $kx^2 + (k + 1)x + 1 = 0$, are equal real numbers , then $k = \dots\dots\dots$
 a) 1 c) 4
 b) -1 d) 3
- (8) l, m are two roots of the equation $3X^2 + bX + c = 0$, , $l > m$, $b^2 - 12c = 36$ then $l - m = \dots\dots\dots$
 a) 2 c) $2\sqrt{3}$
 b) 9 d) 12
- (9) The general solution of the equation: $\sin(3A) = \cot(2A)$
 Is $A = \dots\dots\dots + \frac{\pi}{6}n, n \in \mathbb{Z}$
 a) $\frac{\pi}{3}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{9}$ d) $\frac{\pi}{12}$

(10) The function $f : f(x) = \dots\dots\dots$



- a) $2 \sin x$ b) $\sin 2x$
c) $\sin x$ d) $2 \sin 2x$

(11) The arc length in a circle of radius 6 cm., opposite to The central angle with measure $\frac{\pi}{2}$ is

- a) $\frac{3\pi}{2}$ b) $\frac{5\pi}{2}$ c) 2π d) 3π

(12) If the terminal side of the angle $(90^\circ - \theta)$ in its standard position, cuts the unit circle at point $(0.6, y)$ where $y > 0$, then $\sec(\theta) + \tan(\theta) \dots$

- a) 2 b) 3 c) $\frac{59}{24}$ d) $\frac{32}{15}$

(13) If $\sin(\theta) = \frac{1}{2}$, $\cos(\theta) = -\frac{\sqrt{3}}{3}$, then $\theta = \dots\dots\dots^\circ$

- a) $\frac{\pi}{6}$ b) $\frac{5\pi}{6}$ c) $\frac{7\pi}{6}$ d) $\frac{11\pi}{6}$

(14) If $2\sin(90^\circ + \theta) = \sqrt{3}$, where θ is the greatest negative angle, then $\sin(3\theta) = \dots$

- a) 1 b) $-\frac{1}{2}$ c) 0 d) -1

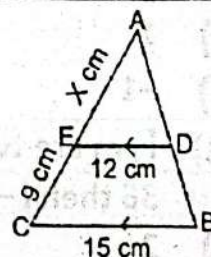
(15) The exterior bisector at the vertex of an isosceles triangle to the base

- a) parallel b) bisect c) equal d) perpendicular

(16) In the opposite figure:

$x = \dots\dots\dots$

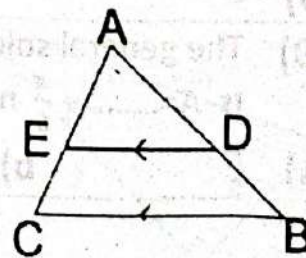
- a) 2.5 c) 8
b) 1.5 d) 4



(17) In the opposite figure:

If $XY \parallel BC$, $\frac{AX}{XB} = \frac{5}{3}$, then $\frac{XY}{BC} = \dots\dots\dots$

- a) $\frac{5}{3}$ b) $\frac{5}{8}$
c) $\frac{5}{2}$ d) $\frac{8}{5}$



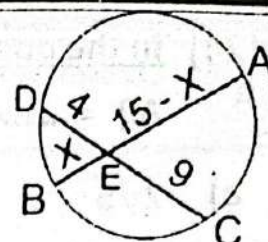
(18) In the opposite figure:Sum of Possible values of $X = \dots\dots\dots$

a) 10

c) 12

b) 15

d) 16

In the opposite figure:(19) $X = \dots\dots$

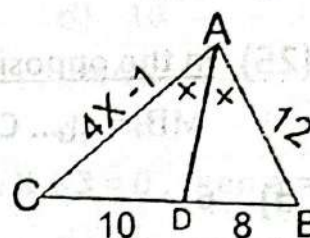
a) 15

c) 10

b) 4

d) 3

□

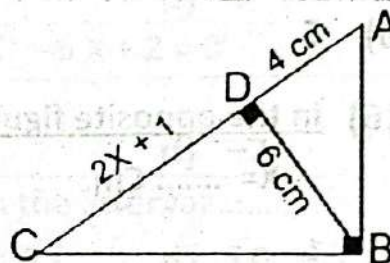
(20) In the opposite figure: $X = \dots\dots\text{cm}$

a) 9

c) 2.5

b) 4

d) 1

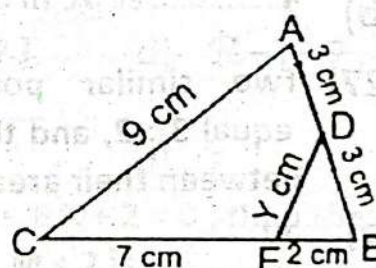
(21) In the opposite figure: $y = \dots\dots\text{Cm.}$

a) 2

c) 5

b) 3

d) 7

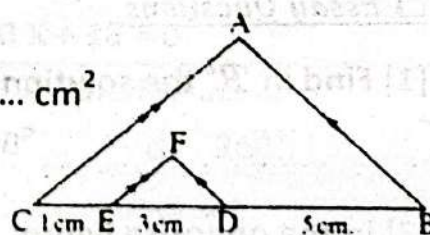
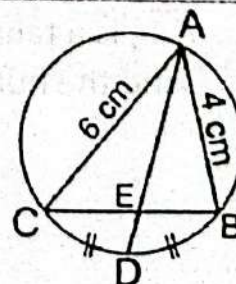
(22) In the opposite figure:Area of $\triangle DEF = 6\text{ cm}^2$, $\overline{DF} \parallel \overline{AB}$, $\overline{EF} \parallel \overline{AC}$, then the area of the shape BDFECA = $\dots\dots\text{cm}^2$

a) 36

c) 136

b) 126

d) 100

(23) In the opposite figure: $\frac{BE}{CE} = \dots\dots\dots$ a) $\frac{4}{5}$ c) $\frac{3}{4}$ b) $\frac{2}{3}$ d) $\frac{1}{2}$ 

(24) In the opposite figure:

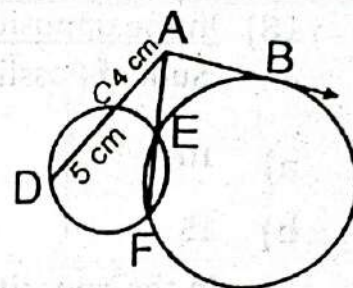
AB =cm

a) $2\sqrt{5}$

c) 6

b) $4\sqrt{5}$

d) $2\sqrt{3}$



(25) In the opposite figure:

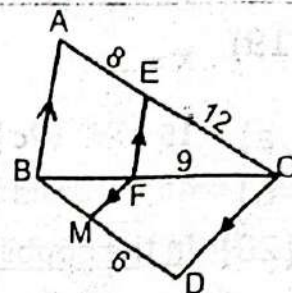
MB = Cm.

a) 6

c) 4

b) 5

d) 3



(26) In the opposite figure:

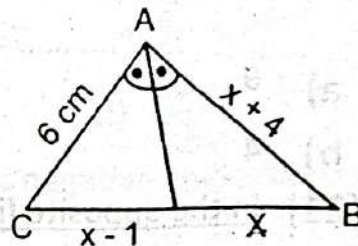
X = Cm.

a) 1

c) 3

b) 2

d) 4



(27) Two similar polygons, the ratio between their perimeters equal 3 : 2, and the sum of their areas 130 cm^2 then the difference between their areas is cm^2

a) 50

c) 70

b) 60

d) 80

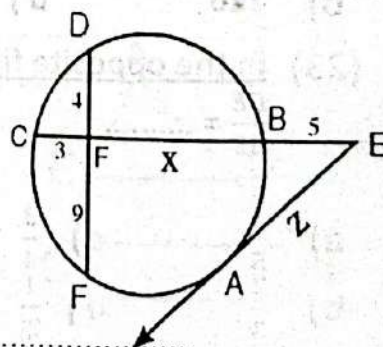
□ Essay Questions

[1] Find in $\mathcal{R}^2$ the solution set of the inequality: $x^2 - 7x + 6 > 0$

[2] In the opposite figure:

$\overline{EA}$, is a tangent to the circle.

Find the numerical values of X, Z



Dakahlia Governorate
Maths supervision

Exam No (4) □
1st Sec - Jan. 2024

Subject : Mathematics □
Time : 3 Hours



[1] Choose the correct answer:

- (1) If the equation : $X^2 - 6X + m = 0$ has two equal real roots , then $m = \dots$
 a) 7 b) 8 c) 9 d) 10
- (2) If the sign of $f(x) = 8 - mX$ is positive on $] -2 , \infty [$, then $k = \dots\dots\dots$
 a) 8 b) -2 c) 16 d) 4
- (3) If $X = 3$ is one of the roots of the equation : $X^2 - aX + 3 = 0$, then $a = \dots\dots\dots$
 a) 5 b) 4 c) 6 d) 2
- (4) If L and M are the roots of the equation: $X^2 - 6X + 2 = 0$
 Then $L^2 - 6L = \dots\dots\dots$
 a) 2 b) 4 c) 3 d) -2
- (5) The sign function $f(x) = 2 - X$ is positive in the interval
 a) $]2 , \infty [$ b) $] -2 , \infty [$ c) $] -\infty , 2 [$ d) $]0 , \infty [$
- (6) The solution set of the inequality: $9 - X^2 < 0$ in $\mathcal{R}^2$ is
 a) $\emptyset$ b) $\mathcal{R}$ c) $[-7 , 7]$ d) $\mathcal{R} - [-7 , 7]$
- (7) If $a = 5 + \sqrt{3}i$, $b = 5 - \sqrt{3}i$, then $ab = \dots\dots\dots$
 a) 28 b) 21 c) 25 d) 7
- (8) If Land M are the roots of the equation : $X^2 - 6X + 2 = 0$, then the quadratic equation whose roots are : $L + 2$, $M + 2$ is
 a) $X^2 - 2X + 16 = 0$ c) $X^2 - X - 16 = 0$
 b) $X^2 - 9X + 16 = 0$ d) $X^2 - 10X + 18 = 0$
- (9) If $\sin(A + 15) = \cos(A + 25)$ where , $0 < A < 90^\circ$, then $A = \dots\dots\dots$
 a) $-\theta$ b) $\theta - 180$ c) $\theta - 360^\circ$ d) 360°
- (10) The angle of measure 490° lies in thequadrant
 a) First b) Second c) Third d) Fourth
- (11) The central angle with measure 120° and includes an arc with length L cm. in a circle with radius 6 cm. , then $L \approx \dots\dots\dots$ cm.
 a) 12.57 b) 10 c) 125.4 d) 1.254
- (12) $\tan 495^\circ = \dots\dots\dots$
 a) 1 b) -1 c) $2\frac{1}{2}$ d) $\frac{1}{2}$

- (13) If the terminal side of the angle θ in its standard position, cuts the unit circle at point $(\frac{3}{5}, y)$ where $y > 0$, then $\tan(\theta) = \dots\dots\dots$

a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

- (14) If $\sin(\theta) = \frac{3}{5}$ where θ is a positive acute angle, then $\sin(180 + \theta) \cos(360 - \theta) + \sin(90 + \theta) = \dots\dots\dots$

a) $\frac{4}{5}$ b) $\frac{5}{4}$ c) $-\frac{3}{5}$ d) Zero

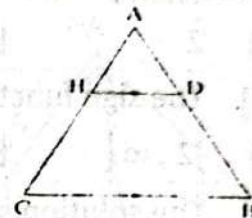
- (15) Two similar polygons, the ratio between their areas is $4 : 25$, then the ratio between their perimeters is $\dots\dots\dots$

a) $2 : 5$ b) $5 : 2$ c) $4 : 25$ d) $8 : 625$

- (16) In the opposite figure:

$\overline{HD} \parallel \overline{BC}$, $\frac{DH}{BC} = \frac{3}{8}$, then $AD : DB = \dots\dots\dots$

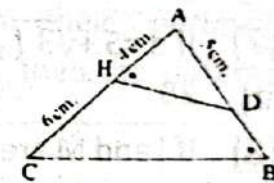
a) $8 : 3$ c) $3 : 5$
b) $5 : 3$ d) $11 : 8$



- (17) In the opposite figure:

$BD = \dots\dots\dots$ cm.

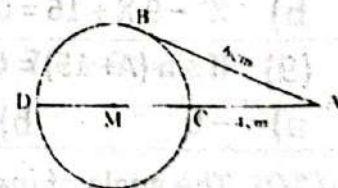
a) $\frac{4}{3}$ b) 12 c) 9 d) 36



- (18) In the opposite figure:

If $\overline{AB}$ is a tangent to the circle M, then area of the circle = $\dots\dots\dots \pi \text{ cm}^2$

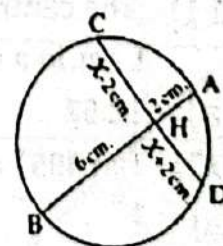
a) 6.25 c) 10
b) 25 d) 62.5



In the opposite figure:

- (19) $x = \dots\dots\dots$ cm

a) 6 c) 4
b) 2 d) 10



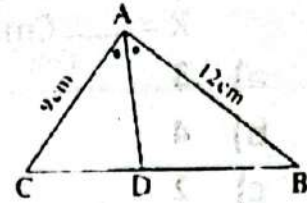
(20) In the opposite figure:

If the perimeter of the triangle ABC = 28 cm.

, AB = 12 cm., AC = 9 cm., $\overline{AD}$ bisects $\angle BAC$

, then $BD \times DC = \dots\dots\dots \text{cm}^2$

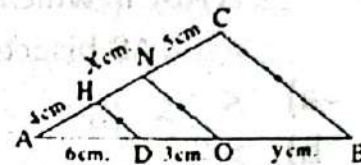
- a) 9 b) 16 c) 7 d) 12



(21) In the opposite figure:

$X + y = \dots\dots\dots \text{cm}$.

- a) 4 : 9 b) 2 : 3 c) 16 : 81 d) 9 : 4

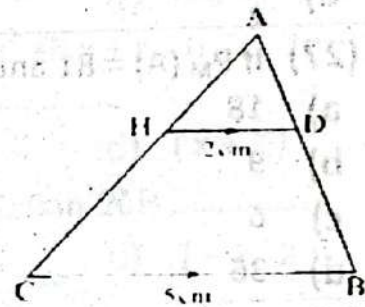


(22) In the opposite figure:

All If the area of triangle ADH = 24 cm^2 ,

$\overline{DH} \parallel \overline{BC}$, then the area of the shape DBCH = $\dots\dots\dots \text{cm}^2$

- a) 36 c) 136
b) 126 d) 100

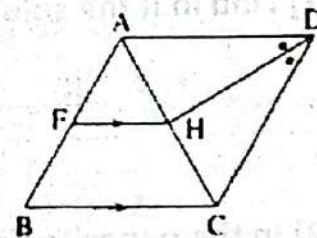


(23) In the opposite figure:

$\overline{FH} \parallel \overline{BC}$, $\overline{DH}$ bisects $\angle ADC$

Then $\frac{AF}{FB} = \dots\dots\dots$

- a) $\frac{HF}{CB}$ c) $\frac{CD}{DA}$
b) $\frac{CH}{HA}$ d) $\frac{AD}{DC}$



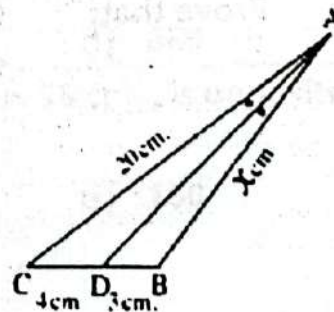
(24) In the opposite figure:

If $\overline{AD}$ bisects $\angle BAC$, AC = 20 cm.

, BD = 3 cm., DC = 4 cm

, then X = $\dots\dots\dots \text{cm}$.

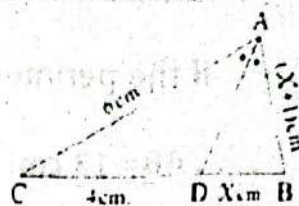
- a) 3 c) 15
b) 7 d) 24



(25) In the opposite figure:

$$X = \dots\dots\dots \text{Cm.}$$

- a) 3
b) 4
c) 2
d) 1

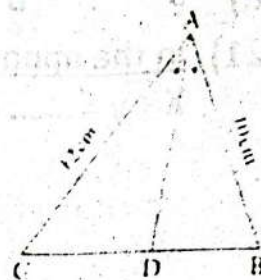


(26) In the opposite figure:

ΔABC in which $AB = 10$ cm., $AC = 12$ cm.

, AD bisects $\angle A$, then BD DC

- a) $<$
b) $>$
c) $=$
d) $\frac{1}{2}$



(27) If $P_M(A) = 81$ and $\overline{AB}$ is a tangent of the circle M , then $AB = \dots\dots\dots$

- a) 18
b) 9
c) 6
d) 36

□ Essay Questions

[1] Find in $\mathbb{R}$ the solution set of the inequality:

$$(x+5)(x-1) > x+5$$

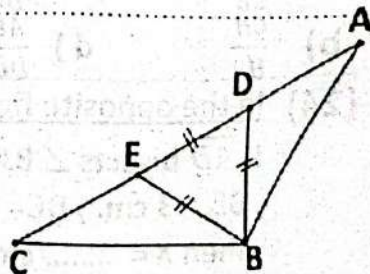
[2] In the opposite figure:

$m(\angle ABC) = 120^\circ$, $\triangle BDE$ is an equilateral

Prove that:

- ① $\triangle ABD \sim \triangle BCE$

$$\textcircled{2} AD \times CE = (ED)^2$$



Dakahlia Governorate
Maths supervision

Exam No (5) □
1st Sec - Jan. 2024

Subject : Mathematics □
Time : 3 Hours



[1] Choose the correct answer:

- (1) If: $(y - 4)^2 = 36$, $y < 0$, then $y + 4 = \dots\dots$
 a) -2 b) 10 c) 2 d) 14
- (2) The function $F : F(x) = -(x - 1)(2 - x)$ is negative in the interval
 a) $]1, 2[$ b) $R - [1, 2]$ c) $]1, -2[$ d) $[1, -2]$
- (3) The common root between $x^2 - 3x + 2 = 0$, $2x^2 - 5x + 2 = 0$ is
 a) 1 b) -2 c) $\frac{1}{2}$ d) 2
- (4) If the two roots of the equation: $ax^2 + b = 0$ are real and different, then
 a) $Ab > 0$ b) $A > 0, b > 0$ c) $a = 0$ d) $Ab < 0$
- (5) The product of the roots of the equations: $ax^2 + bx + c = 0$, $bx^2 + cx + a = 0$, $cx^2 + ax + b = 0$ equals
 a) $(x-2)(x+2)$ b) $x^2 - 4x + 4$ c) $x - 2$ d) $(x+2)^2$
- (6) The solution set of the inequality: $-x(x+2) \geq 0$ in $\mathcal{R}$ is
 a) $\{0, -2\}$ b) $[-2, 0]$ c) $] -2, 0[$ d) $[-2, 2]$
- (7) $(1+i^4)(1-i^7) = x + yi$, then $x + y = \dots\dots\dots$
 a) 4 b) 5 c) 2 d) 1
- (8) L, l^2 are two roots of the equation $2X^2 + bX = -54$, then $b = \dots\dots\dots$
 a) -12 b) 6 c) -24 d) Zero
- (9) If $A + B = 90^\circ$, and $\tan A = \frac{1}{3}$, Then $\tan B = \dots\dots\dots$
 a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) 1 d) 3
- (10) All the angle of the following measure lies in the second quadrant except°
 a) -240 b) -120 c) 100 d) 860
- (11) The arc of length 5π cm. in a circle with radius 15 cm., is opposite to central of measure°
 a) 30 b) 60 c) 90 d) 180

(12) If the terminal side of the angle θ in its standard position, cuts the unit circle at point $(-\frac{\sqrt{3}}{2}, y)$ where $y > 0$, then $\theta = \dots\dots\dots^\circ$

- a) 30 b) 150 c) 210 d) 330

(13) If $\csc(\theta) = \frac{1}{2}$, $\sin(\theta) = \frac{\sqrt{3}}{2}$, then the measure of angle θ is $\dots\dots\dots^\circ$

- a) $\frac{\pi}{3}$ b) $\frac{5\pi}{6}$ c) $\frac{5\pi}{3}$ d) $\frac{11\pi}{6}$

(14) $\tan^{-1}(\frac{1}{\sqrt{3}}) + \cos^{-1}(\frac{\sqrt{3}}{2}) = \dots\dots\dots$

- a) $\frac{\pi}{3}$ b) $\frac{\pi}{2}$ c) $\frac{3\pi}{2}$ d) $\frac{\pi}{6}$

(15) If k is the similarity factor of polygon P_1 to polygon P_2 and $0 < k < 1$, then the polygon P_1 is $\dots\dots\dots$ To the polygon P_2

- a) congruent b) A shrinking
c) An enlargement d) Twice the area

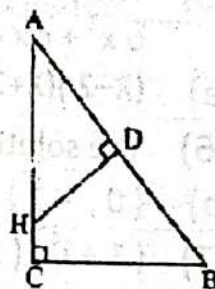
(16) In the opposite figure:

$\triangle ABC \sim \triangle AHD$ and if $m(\angle B) = 3X + 10^\circ$,

And $m(\angle AHD) = X + 30^\circ$,

Then $m(\angle A) = \dots\dots\dots^\circ$

- a) 50 c) 40
b) 30 d) 60



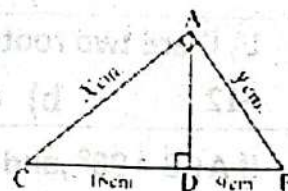
(17) In the opposite figure:

$AC = X$ cm, $AB = Y$ cm

$DB = 9$ cm, $CD = 16$ cm

Then $\frac{Y}{X} = \dots\dots\dots$

- a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) 2 d) 1

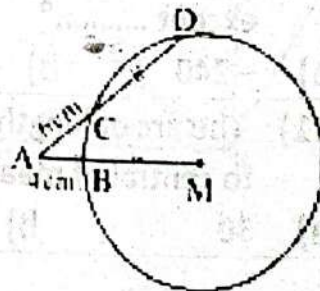


(18) In the opposite figure:

If $CD = BM$, $AC = 6$ cm, $AB = 4$ cm

Then the circumference of the circle $m = \dots\dots\dots \pi \text{ cm}^2$

- a) 15 c) 18
b) 20 d) 24



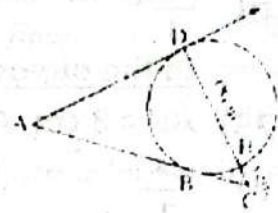
In the opposite figure:

- (19) $\overrightarrow{AB}$, $\overrightarrow{AD}$ are two tangents at B, D

, $\overrightarrow{AB}$ cut the circle at H, D

if CH = 3 cm., HD = 18 cm ,Then AC – AD =..... cm

- a) $\sqrt{7}$ c) $2\sqrt{7}$
b) $3\sqrt{7}$ d) $6\sqrt{7}$

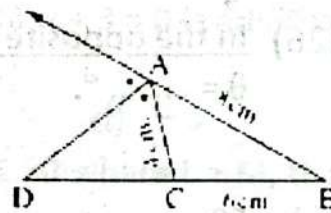


- (20) In the opposite figure:

AC = 4 cm , AB = 8 cm , BC = 6 cm

Then DC=

- a) 2 b) 4 c) 6 d) 8



- (21) In the opposite figure:

If $\frac{AH}{HB} = \frac{2}{3}$, AD = 7 cm , BC = 22 cm

then HO =cm

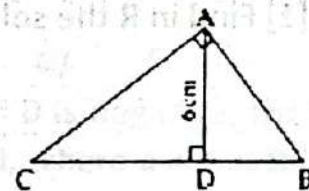
- a) 9 b) 11 c) 13 d) 15



- (22) In the opposite figure:

If AD = 6 cm., Tan B + tan C = $\frac{5}{3}$ then BC= ...cm.

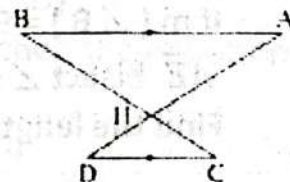
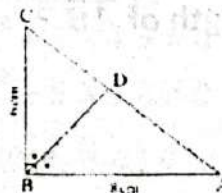
- a) 36 c) 136
b) 126 d) 100



- (23) In the opposite figure:

$\overrightarrow{AB} \parallel \overrightarrow{CD}$, 2 AH = 3 HD , then BC=cm.

- a) 18 c) 20
b) 24 d) 25



- (24) In the opposite figure:

, AD = cm.

- a) $5\frac{5}{7}$ c) $6\frac{3}{4}$

b) $\frac{4}{3}$

d) 5

In the opposite figure:

(25) AD = 8 cm, AH = 6 cm., then $\tan \theta = \dots\dots$ Cm.

a) $\frac{-4}{3}$

b) $\frac{-3}{4}$

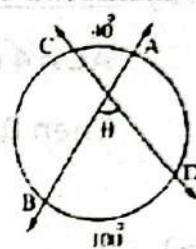
c) $\frac{4}{3}$

d) $\frac{3}{4}$



(26) In the opposite figure:

$\theta = \dots\dots\dots^\circ$



a) 50

c) 140

b) 70

d) 60

(27) If M is a circle with diameter length 12 cm. A is a point in its plane and the power of the point A with respect to the circle M equals 13 cm., then MA =cm.

a) 7

b) 14

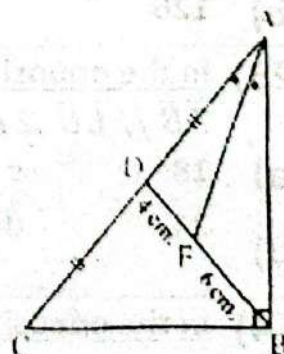
c) 3.5

d) 6

☐ Essay Questions[1] Find in R the solution set of the inequality: $x^2 - 2x - 8 \leq 0$

[2] In the opposite figure:

If $m(\angle B) = 90^\circ$, D is midpoint of $\overline{AC}$,
 $\overline{AE}$ bisect $\angle BAD$, $BE = 6$ cm, $ED = 4$ cm.
 Find the length of $\overline{AB}$?



Dakahlia Governorate
Maths supervision

Exam No (6) □
1st Sec - Jan. 2024

Subject : Mathematics □
Time : 3 Hours



[1] Choose the correct answer:

- (1) If two roots of the equation: $(X - K)^2 + 4X = 0$ are additive inverse to each other, then $K = \dots\dots$
- a) -2 b) Zero c) 2 d) 4
- (2) If the sign of $f(x) = 6 - 2x$ is non-positive on $]5, \infty[$ when
- a) $X > 3$ b) $X \leq 3$ c) $X < 3$ d) $X \geq 3$
- (3) If one of two roots of the equation: $x^2 - (k + 2)x + 3 = 0$ is additive inverse of the other root, then $k = \dots\dots\dots$
- a) 3 b) 2 c) -2 d) -3
- (4) If L, M are two roots of the equation: $x^2 - x - 2 = 0$ where $L > M$, then $2L + 5M^2 = \dots\dots\dots$
- a) $X^2 + 2X - 15 = 0$ c) $X^2 - 2X - 15 = 0$
b) $X^2 - 2X + 15 = 0$ d) $X^2 + 2X + 15 = 0$
- (5) The quadratic equation whose two roots are $(2 - 3i)(2 + 3i)$ is ...
- a) $X^2 + 4x + 13 = 0$ c) $X^2 + 4x - 13 = 0$
b) $X^2 - 4x + 13 = 0$ d) $X^2 - 4x - 13 = 0$
- (6) Which of the following does not belong to the solution set of the inequality: $3X - 5 < 4x - 3$?
- a) -1 b) -2 c) -3 d) -5
- (7) The discriminant of the equation: $ax^2 + bx + c = 0$ is negative, then the solution set of the inequality: $ax^2 + bx + c < 0$, where $a < 0$ in $\mathbb{R}$ is
- a) $\mathbb{R}$ b) $\mathbb{R}^+$ c) $\emptyset$ d) $\mathbb{R}^-$
- (8) L, M are two roots of the equation $X^2 - 3X = -5$, then the equation whose two roots $(L + 1), (M + 1)$ is
- a) $X^2 - 9X + 5 = 0$ c) $X^2 + 3X + 5 = 0$
b) $X^2 - 5X + 9 = 0$ d) $X^2 - 5X - 3 = 0$
- (9) If $\tan(180 + 5\theta) + \tan(270 + 4\theta) = 0$ where, $\theta \in]0, \frac{\pi}{2}[$, then $\theta = \dots\dots^\circ$
- a) 10 b) 20 c) 60 d) 45

(10) Measure of the central angle subtends an arc whose length equals the diameter of the circle =° (Rounded to the nearest degree)

- a) 13 b) 115 c) 120 d) 180

□

(11) The central angle with measure 120° and includes an arc with length L cm. in a circle with radius 6 cm., then $L \approx$ cm.

- a) 12.57 b) 10 c) 125.4 d) 1.254

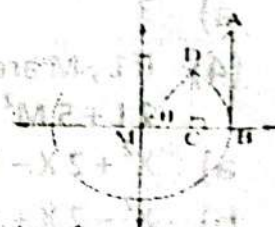
(12) If the terminal side of the angle θ in its standard position, cuts the unit circle at point $(\frac{3}{5}, y)$ where $y > 0$, then $\tan(\theta) =$

- a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

(13) In the opposite figure:

A unit circle M and $\overline{AB}$ is a tangent to the circle

$\overline{CD} \perp \overline{MB}$, then $\frac{AB}{CD}$



- a) $\sec \theta$ b) $\operatorname{cosec} \theta$ c) $\tan \theta$ d) $\cos \theta$

(14) In the right angled- triangle, x is an acute angle where $\sin x = \frac{4}{5}$ the $\cos(90 - x) =$

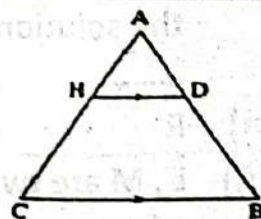
- a) $\frac{3}{5}$ b) $-\frac{3}{5}$ c) $-\frac{4}{5}$ d) $\frac{4}{5}$

(15) $\triangle ABC \sim \triangle AHD$ and $AB = 2 LM$, then $\frac{\text{area of } \triangle LMN}{\text{area of } \triangle ABC} =$

- a) 1:2 b) 2 c) 1:4 d) 4

(16) In the opposite figure:

$\overline{HD} \parallel \overline{BC}$, $\frac{DH}{BC} = \frac{3}{8}$, then $AD : DB =$:

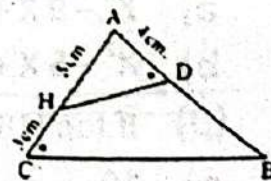


- a) 8:3 c) 3:5
b) 5:3 d) 11:8

(17) In the opposite figure:

$AD = 4$ cm, $AH = 5$ cm, $HC = 3$ cm

$m(\angle ADH) = m(\angle C)$, $BD =$ cm.



- a) $\frac{4}{3}$ b) 12 c) 9 d) 36

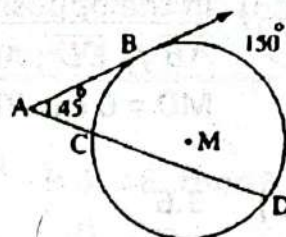
(18) In the opposite figure:

If $\overline{AB}$ is a tangent to the circle M at B ,

$m(\angle A) = 45^\circ$, $m(\widehat{BD}) = 150^\circ$

, then $m(\widehat{BC}) = \dots\dots\dots^\circ$

- a) 120 c) 90
b) 60 d) 180



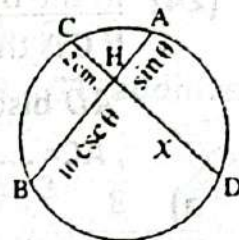
In the opposite figure:

(19) AB, CD are two chords in a circle, $AB \cap CD = \{H\}$

$AH = \sin \theta$, $HB = 10 \csc \theta$, $\frac{\pi}{2} > \theta > 0$, and $HC = 2$ cm

Then $X = \dots\dots\dots$ cm

- a) 5 b) 10 c) $\frac{\sqrt{3}}{2}$ d) $10\sqrt{3}$

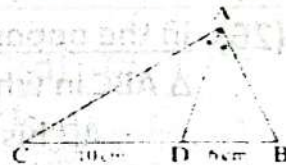


(20) In the opposite figure:

, $BD = 6$ cm. , $DC = 10$ cm. ,

, $AC - AB = 6$ cm. , then $AC = \dots\dots\dots$ cm.

- a) 13 b) 14 c) 15 d) 16



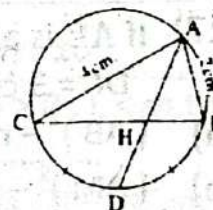
(21) In the opposite figure:

D is midpoint of $\widehat{CB}$, $AB = 2$ cm , $AC = 4$ cm

Then:

$BH : BC = \dots\dots\dots$

- a) 1 : 1 b) 1 : 2 c) 2 : 1 d) 1 : 3



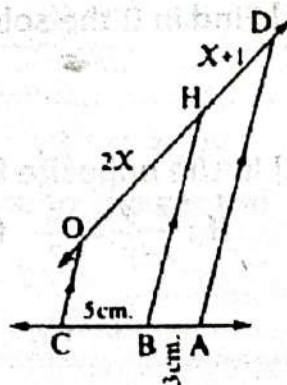
(22) In the opposite figure

$\overline{AD} \parallel \overline{BH} \parallel \overline{CO}$, $AB = 3$ cm , $BC = 5$ cm ,

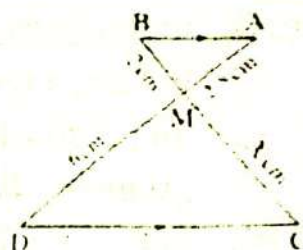
$DH = (x + 1)$ cm , $HO = 2x$ cm.

then $x = \dots\dots$ cm

- a) 3 d) 4
b) 5 c) 8

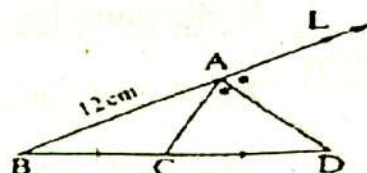


- MD = 6 cm. Then $x = \dots\dots\dots$



- d) 4.8

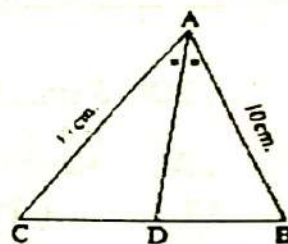
- , AC= cm



- d) 9

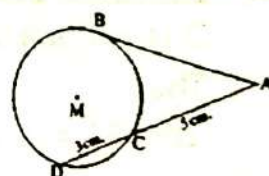
- d) Square

- , AD bisects $\angle A$, then BD DC



- d) $\frac{1}{2}$

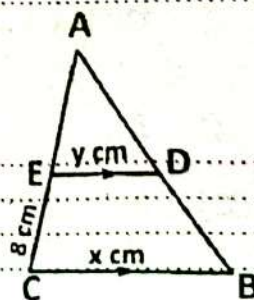
- DC = 3 cm., CA = 5 cm. $P_M(A) = \dots\dots\dots$



- d) 40

[1] Find in $\mathbb{R}$ the solution set of the inequality: $-x^2 + x > 1$

- If : $\frac{x-y}{x+y} = \frac{2}{7}$ find AH?



Dakahlia Governorate
Maths supervision

Exam No (7) □
1st Sec - Jan. 2024

Subject : Mathematics □
Time : 3 Hours



[1] Choose the correct answer:

- (1) If $x = -1$ is one of two roots of the equation : $X^2 - kX = 6$, then $K = \dots$
 a) -5 b) 5 c) 6 d) -6
- (2) the sign of $f(x) = -5$ is positive on
 a) $] -\infty, -5[$ b) $] -5, \infty[$ c) $\mathbb{R}$ d) $\emptyset$
- (3) If one of two roots of the equation : $x^2 - (M + 2)x + 3 = 0$ is additive inverse of the other, then $m = \dots$
 a) -3 b) 2 c) -2 d) 3
- (4) If l, m are two roots of the equation: $x^2 + 3x - 4 = 0$, then $l^2 + 3l + m^2 + 3m - 4 = \dots$
 a) -4 b) -8 c) 4 d) 8
- (5) If $4x + 2yi = 8 + 4i$, then $x + y = \dots$
 a) -2 b) 4 c) 9 d) 16
- (6) The solution set of the inequality: $X^2 + 49 = 0$ in $\mathbb{R}$ is
 a) $\emptyset$ b) $\{-2\}$ c) $\{-3, 7\}$ d) $\{3\}$
- (7) If the two roots of the equation : $4x^2 - 12x + c = 0$, are equal real numbers, then $c = \dots$
 a) 3 b) 4 c) 9 d) 16
- (8) L, M are two roots of the equation $aX^2 + bX = -c$, $a > 0$, $L < m$ then the solution set of the inequality $aX^2 + bX + c < 0$ is
 a) $] -\infty, L[$ b) $] m, \infty[$ c) $] L, m[$ d) $\mathbb{R} - [L, m]$
- (9) If $\tan(A + 20) = \cot(3A + 30)$ where, $0 \leq A \leq 90^\circ$, then $A = \dots$
 a) 40 b) 10 c) 90 d) 50
- (10) The range of the function $\mathcal{F}: \mathcal{F}(x) = 3 \sin 2x$ is
 a) $[-2, 2]$ b) $] -2, 2[$ c) $[-3, 3]$ d) $] -3, 3[$
- (11) The arc length in a circle of radius 6 cm., opposite to The central angle with measure $\frac{\pi}{2}$ is
 a) $\frac{3\pi}{2}$ b) $\frac{5\pi}{2}$ c) 2π d) 3π

(12) $\cos(90^\circ - \theta) \times \csc \theta = \dots\dots$

- a) -1 b) zero c) 1 d) $\cot \theta$

(13) If $\sin(\theta) = -\frac{1}{2}$, $\cos(\theta) = -\frac{\sqrt{3}}{2}$, then $\theta = \dots\dots\dots^\circ$

- a) 30 b) 150 c) 210 d) 330

(14) If $\tan(180^\circ + \theta) = 1$, where θ is the smallest positive angle, then $\theta = \dots\dots^\circ$

- a) 60 b) 30 c) 45 d) 135

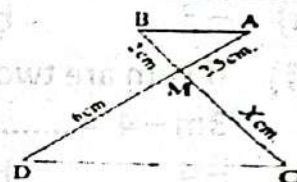
(15) The exterior bisector at the vertex of an isosceles triangle
..... to the base

- a) parallel b) bisect c) equal d) perpendicular

(16) In the opposite figure:

$X = \dots\dots$

- a) 3.6 c) 4
b) 4.2 d) 4.8

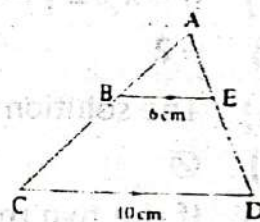


(17) In the opposite figure:

If $\overline{BE} \parallel \overline{DC}$,

then $\frac{a(\triangle ABE)}{a(\text{trapezium } BCDE)} = \dots\dots\dots$

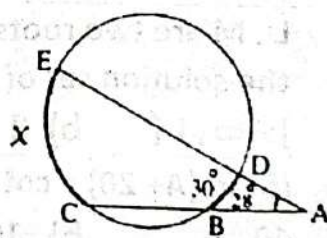
- a) $\frac{25}{81}$ b) $\frac{3}{5}$ c) $\frac{9}{16}$ d) $\frac{9}{25}$



(18) In the opposite figure:

$X = \dots\dots\dots^\circ$

- a) 30 c) 60
b) 86 d) 26

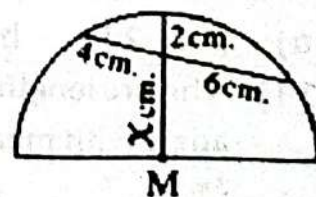


In the opposite figure:

(19) M is a center of semicircle,

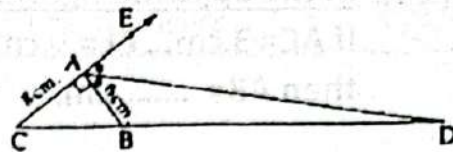
then $X = \dots\dots$ cm

- a) 36 c) 48
b) 54 d) 72



(20) In the opposite figure:

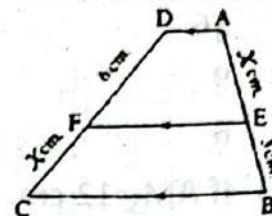
The area of $\triangle ABC = \dots \text{cm}^2$.



- a) 4 b) 5 c) 6 d) 8

(21) In the opposite figure:

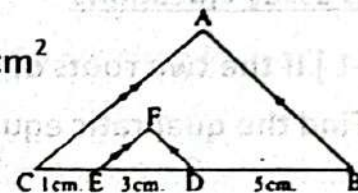
$X = \dots \text{Cm}$.



- a) 6 b) $3\sqrt{2}$ c) $3\sqrt{3}$ d) 18

(22) In the opposite figure:

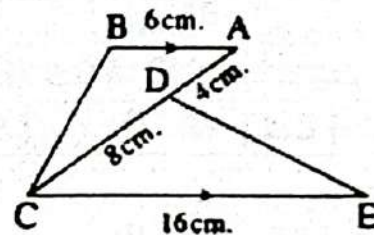
area of $\triangle DEF = 6 \text{ cm}^2$, $\overline{DF} \parallel \overline{AB}$, $\overline{EF} \parallel \overline{AC}$, then the area of the shape BDFECA = $\dots \text{cm}^2$



- a) 36 c) 136
b) 126 d) 100

(23) In the opposite figure:

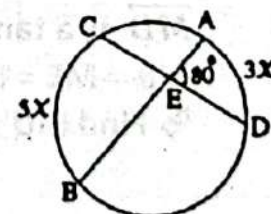
$\overline{AB} \parallel \overline{EC}$, Then $\frac{ED}{BC} = \dots$



- a) $\frac{4}{3}$ c) $\frac{3}{4}$
b) $\frac{2}{3}$ d) $\frac{1}{2}$

(24) In the opposite figure:

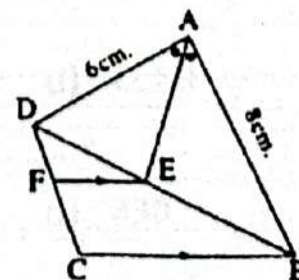
$X = \dots^\circ$



- a) 10 c) 20
b) 30 d) 40

(25) In the opposite figure:

$\frac{DF}{FC} = \dots \text{Cm}$.

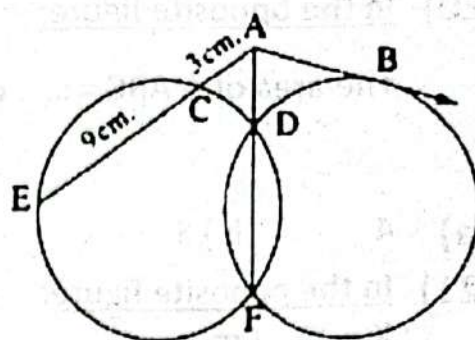


- a) $\frac{4}{3}$ c) $\frac{2}{3}$
b) $\frac{8}{7}$ d) $\frac{3}{4}$

(26) In the opposite figure:

If $AC = 3$ cm., $CE = 9$ cm.
then $AB = \dots\dots$ Cm.

- a) 27
- b) 36
- c) 9
- d) 6



(27) If $AM = 12$ cm., $r = 9$ cm. where A is a point outside the circle M
then $P_M(A) = \dots\dots\dots$

- a) 65
- b) 63
- c) 49
- d) 7

☐ Essay Questions

[1] If the two roots of the equation : $3X^2 + 5X - 7$ are L, m ,

Find the quadratic equation whose two roots are $L + \frac{1}{m}, m + \frac{1}{L}$

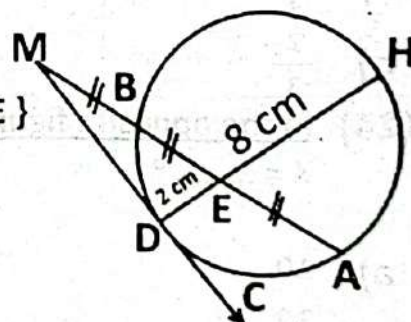
[2] In the opposite figure:

$\overline{MA}$ cuts the circle at B, A, $\overline{MA} \cap \overline{HE} = \{E\}$

$\overline{MD}$ is a tangent of the circle at D

$MB = ME = EA, DE = 2$ cm., $EH = 8$ cm..

Find MD



Dakahlia Governorate
Maths supervisionExam No (8) □
1st Sec - Jan. 2024Subject : Mathematics □
Time : 3 Hours

[1] Choose the correct answer:

- (1) If the two roots of the equation : $3X^2 - 2kX - 4 = 0$ are different in sign then $k = \dots\dots\dots$
- a) -5 b) 5 c) 6 d) -6
- (2) $(1+i)(1+i^2)(1+i^3)(1+i^4)\dots\dots\dots(1+i^{99})(1+i^{100}) = \dots\dots\dots$
- a) 1 b) 2 c) 0 d) 2^{100}
- (3) If one of two roots of the equation : $x^2 - bx + c = 0$ is two odd consecutive numbers , then $b^2 - 4c = \dots\dots\dots$
- a) -1 b) 2 c) 4 d) 3
- (4) If l, l^2 are two roots of the equation: $2x^2 + kx + 16 = 0$, then $k = \dots\dots\dots$
- a) -12 b) 12 c) 6 d) -6
- (5) If $(3-i)$ is one of two roots of the equation : $x^2 - bx + c = 0$,
Then $b + c = \dots\dots\dots$
- a) 10 b) 4 c) 14 d) 16
- (6) The solution set of the inequality: $(X-2)(X-3) \geq 0$ in $\mathcal{R}$ is $\dots\dots\dots$
- a) $]2, 3[$ b) $[2, 3]$ c) $\mathcal{R} - [2, 3]$ d) $\mathcal{R} -]2, 3[$
- (7) If $3x - 2yi = (5 - 2i)^2$, then $y - x = \dots\dots\dots$
- a) 3 b) -3 c) 17 d) $21 - 20i$
- (8) If l, m are two roots of the equation $X^2 + X - 5 = 0$, $l^2 + m^2 + l + m = \dots\dots\dots$
- a) 10 b) -10 c) 5 d) -5
- (9) If $\tan(A+20) = \cot(3A+30)$ where , $0 \leq A \leq 90^\circ$, then $A = \dots\dots\dots$
- a) 40 b) 10 c) 90 d) 50
- (10) The range of the function $f : f(x) = 3 \sin 2x$ is $\dots\dots\dots$
- a) $[-2, 2]$ b) $] -2, 2[$ c) $[-3, 3]$ d) $] -3, 3[$
- (11) $\cos(90^\circ - \theta) \times \csc \theta = \dots\dots\dots$
- a) -1 b) zero c) 1 d) $\cot \theta$
- (12) If $\sin(\theta) = -\frac{1}{2}$, $\cos(\theta) = -\frac{\sqrt{3}}{2}$, then $\theta = \dots\dots\dots^\circ$
- a) 30 b) 150 c) 210 d) 330

(13) The arc length in a circle of radius 6 cm. , opposite to The central angle with measure $\frac{\pi}{2}$ is

- a) $\frac{3\pi}{2}$ b) $\frac{5\pi}{2}$ c) 2π d) 3π

(14) If $\tan(180^\circ + \theta) = 1$, where θ is the smallest positive angle, then $\theta = \dots^\circ$

- a) 60 b) 30 c) 45 d) 135

(15) Two similar polygons , their areas are 100 cm^2 , 64 cm^2 and the perimeter of the first 60cm then the perimeter of the other is ...

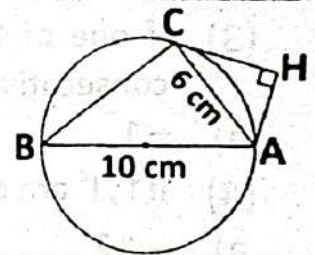
- a) 24 b) 36 c) 48 d) 75

(16) In the opposite figure:

If $\overline{AB}$ is diameter of length 10cm , $AC = 6 \text{ cm}$

$\overline{CH}$ is tangent at C , $\overline{AH} \perp \overline{CH}$ then $HC = \dots$

- a) 8 c) 4.8
b) 6.3 d) 2.4



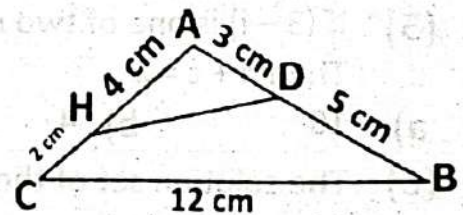
(17) In the opposite figure:

$AH = 4 \text{ cm}$, $HC = 2 \text{ cm}$, $AD = 3 \text{ cm}$.

$DB = 5 \text{ cm}$, $BC = 12 \text{ cm}$,

then $DH = \dots \text{ cm}$.

- a) 4 b) 5 c) 6 d) 8



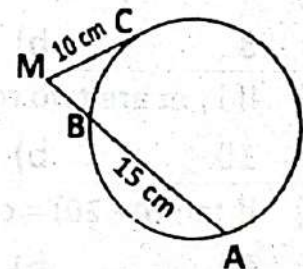
(18) In the opposite figure:

$\overline{MC}$ is tangent at C ,

$AB = 15 \text{ cm}$. $MC = 10 \text{ cm}$.

Then $MB = \dots \text{ cm}$.

- a) 5 c) 8
b) 20 d) 15

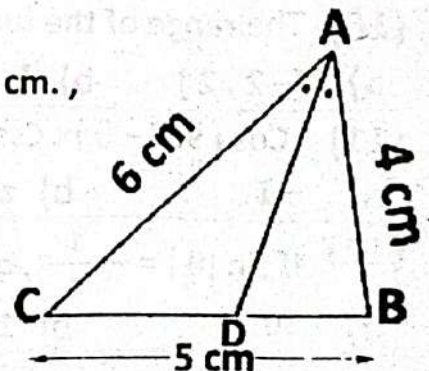


In the opposite figure:

(19) $\overline{AD}$ is a bisector $\angle BAC$, $AC = 6 \text{ cm}$, $AB = 4 \text{ cm}$,

$BC = 5 \text{ cm}$, then $DC = \dots \text{ cm}$.

- a) 1 c) 2
b) 3 d) 4



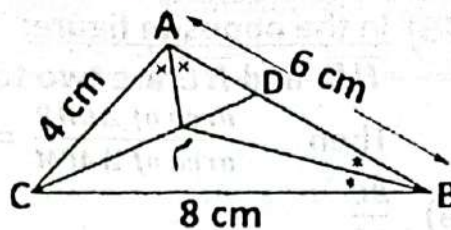
(20) In the opposite figure:

$\overline{AM}$ is a bisector $\angle BAC$,

$\overline{BM}$ is a bisector $\angle ABC$

$AB = 6$ cm. , $AC = 4$ cm. , $BC = 8$ cm. ,
then $AD = \dots$ cm.

- a) 1.5 b) 2 c) 3 d) 4



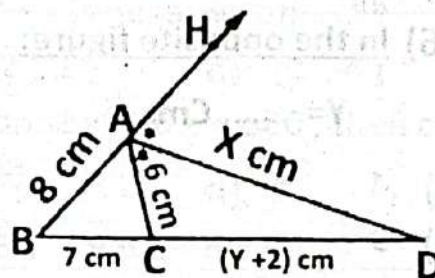
(21) In the opposite figure:

$\overline{AD}$ is a bisector $\angle CAH$,

$AB = 8$ cm. , $BC = 7$ cm. ,

$AD = X$ cm. , $DC = (Y + 2)$ cm. ,
then $(X, Y) = \dots\dots\dots$

- a) $(6\sqrt{15}, 19)$ b) $(6\sqrt{15}, 26)$ c) $(10, 19)$ d) $(10, 26)$

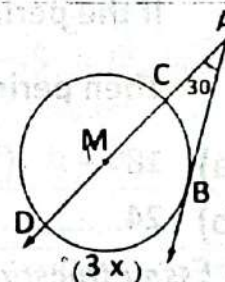


(22) In the opposite figure:

$\overline{AB}$ is tangent at B , $m(\widehat{BD}) = (3X)^\circ$

$m(\angle A) = 30^\circ$, then $X = \dots\dots\dots^\circ$

- a) 30 c) 40
b) 60 d) 75

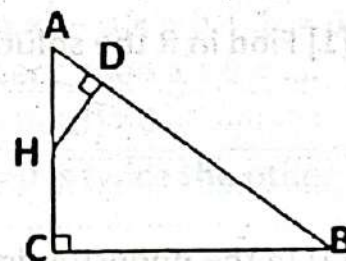


(23) In the opposite figure:

$m(\angle B) = (3X + 10)^\circ$

$m(\angle AHD) = (X + 30)^\circ$ Then $X = \dots\dots\dots^\circ$

- a) 10 c) 20
b) 30 d) 40



(24) In the opposite figure:

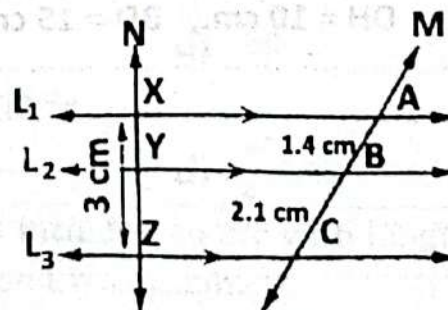
$\overline{L_1} \parallel \overline{L_2} \parallel \overline{L_3}$, $AB = 1.4$ cm. ,

$BC = 2.1$ CM,

$XZ = 3$ cm.

then $XY = \dots\dots\dots$ Cm .

- a) 1 c) 1.2
b) 1.5 d) 1.8



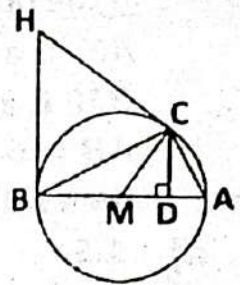
(25) In the opposite figure:

$\overline{HB}$ and $\overline{HC}$ are two tangents $\overline{AB}$ is diameter

Then $\frac{\text{area of } \triangle CHB}{\text{area of } \triangle ACM} = \dots\dots$

- a) $\frac{BC}{CA}$
b) $\frac{BD}{AB}$

- c) $\left(\frac{MC}{MD}\right)^2$
d) $\left(\frac{BC}{AM}\right)^2$

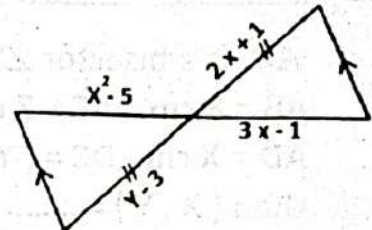


(26) In the opposite figure:

$Y = \dots\dots$ Cm.

- a) 4
b) 9

- c) 11
d) 12



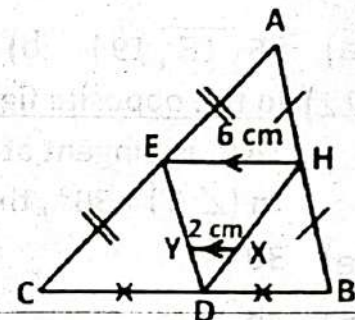
(27) In the opposite figure:

If the perimeter of $\triangle DXY = 8$ cm.

Then perimeter of $\triangle ABC = \dots\dots$ cm.

- a) 18
b) 24

- c) 36
d) 48



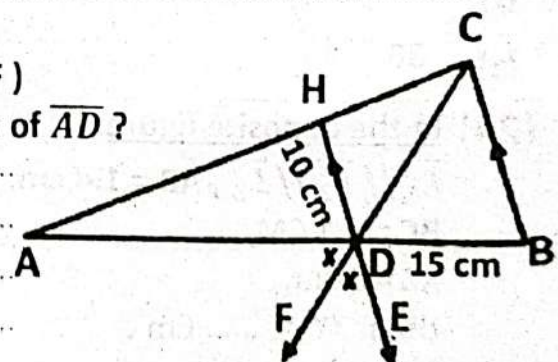
Essay Questions

[1] Find in R the solution set of the inequality: $x^2 + 12 \geq x$

[2] In the opposite figure:

$\overline{HD} \parallel \overline{BC}$, $m(\angle ADF) = m(\angle EDF)$

DH = 10 cm., BD = 15 cm. Find length of $\overline{AD}$?



Dakahlia Governorate
Maths supervision

Exam No (9) □
1st Sec - Jan. 2024

Subject : Mathematics □
Time : 3 Hours



[1] Choose the correct answer:

- (1) $\frac{\sqrt{-36} \times \sqrt{-4}}{\sqrt{-16}} = \dots\dots$
 a) 2 b) 1 c) 2i d) i
- (2) If $f: [-2, 4] \longrightarrow \mathbb{R}$ the sign of $f(x) = 2 - x$ is negative on.....
 a) $[-2, 2[$ b) $]2, 4]$ c) $[-2, 2]$ d) $[2, 4]$
- (3) If $m, m + 1$ are two roots of the equation: $2x^2 - 6x + c = 0$, then $c = \dots$
 a) $\frac{17}{4}$ b) $\frac{19}{4}$ c) -20 d) 4
- (4) If L, M are two roots of the equation: $3x^2 - 9hx + h = 0$
 $(2L - 1)(2M - 1) = 5$, then $h = \dots\dots$
 a) $\frac{4}{3}$ b) $\frac{5}{8}$ c) $\frac{3}{2}$ d) $\frac{-6}{7}$
- (5) If one of two roots of the equation: $ax^2 + bx + c - 5 = 0$, is Zero then
 a) $a = 1$ b) $a = b$ c) $c = 5$ d) $b = 0$
- (6) The solution set of the inequality: $X^2 + 36 < 0$ in $\mathbb{R}$ is
 a) $\emptyset$ b) $\mathbb{R}$ c) $[-7, 7]$ d) $\mathbb{R} - [-7, 7]$
- (7) $(2 - i)$ is one of two roots of the equation: $ax^2 - bx + b + 1 = 0$, where the coefficient of its terms are real number, then $a + b = \dots\dots$
 a) 3 b) 4 c) 5 d) 8
- (8) If one of two roots of the equation $X^2 - 3X + k = 0$ is twice the other root then $k = \dots\dots$
 a) 4 b) 2 c) -2 d) -4
- (9) If $\csc(A) = 2$ where, $0 < A < 90^\circ$, then $A = \dots\dots^\circ$
 a) 15 b) 30 c) 45 d) 60
- (10) The smallest positive angle of measure $900^\circ = \dots\dots$
 a) $\frac{3\pi}{2}$ b) $\frac{2\pi}{3}$ c) π d) $\frac{\pi}{4}$
- (11) The central angle with measure 30° and includes an arc with length L cm. in a circle with diameter 24 cm., then $L = \dots\dots$ cm.
 a) π b) 2π c) $\frac{1}{2}\pi$ d) $\frac{1}{6}\pi$

(12) $\cos \theta = -\frac{3}{5}$, $90^\circ < \theta < 180^\circ$, then $\cos (270^\circ - \theta) = \dots\dots\dots$

- a) $\frac{3}{5}$ b) $\frac{4}{5}$ c) $-\frac{4}{5}$ d) $-\frac{4}{3}$

(13) The range of the function $F(\theta) = 3 + \cos(5\theta)$ is.....

- a) $[-8, 8]$ b) $[-3, 3]$ c) $[-2, 8]$ d) $[2, 4]$

(14) The third angle of triangle whose angle are $\frac{5}{12}\pi$, 45° is°

- a) 90 b) 30 c) $\frac{1}{3}\pi$ d) $\frac{2}{3}\pi$

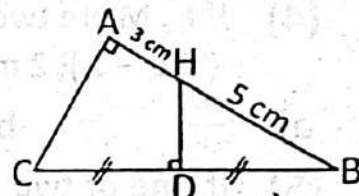
(15) Two similar polygons, the ratio between their areas is 4 : 25, then the ratio between their perimeters is

- a) 2 : 5 b) 5 : 2 c) 4 : 25 d) 8 : 625

(16) In the opposite figure:

DB =

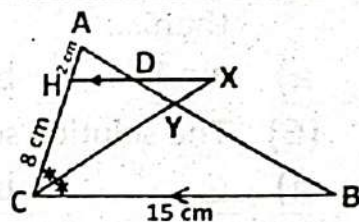
- a) 3 c) 5
b) 4 d) $2\sqrt{5}$



(17) In the opposite figure:

XD = cm.

- a) 3 c) 5
b) 6 d) 4

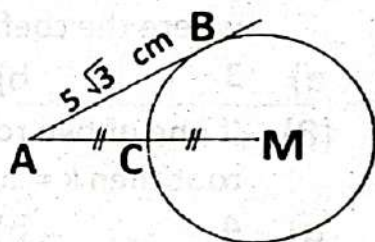


(18) In the opposite figure:

If $\overline{AB}$ is a tangent to the circle M

, if c is the midpoint of $\overline{MA}$ then its radius =

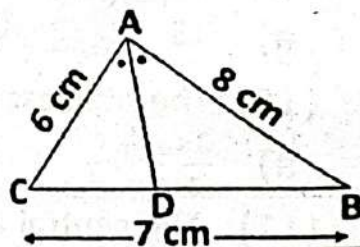
- a) 5 c) 10
b) $\frac{5\sqrt{6}}{2}$ d) $\frac{5\sqrt{3}}{2}$



In the opposite figure:

(19) AD =

- a) 6 c) 9
b) 10 d) $2\sqrt{15}$



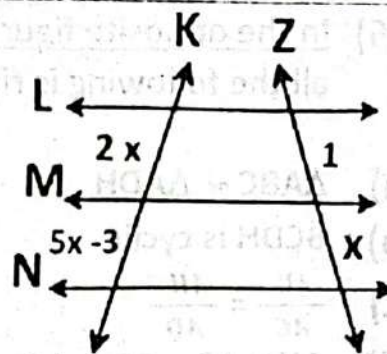
(20) If $\triangle ABC \sim \triangle XYZ$, $m(\angle A) + m(\angle Z) = 80^\circ$ then $m(\angle Y) = \dots\dots\dots^\circ$

- a) 10 b) 50 c) 80 d) 100

(21) In the opposite figure:

$X = \dots\dots$

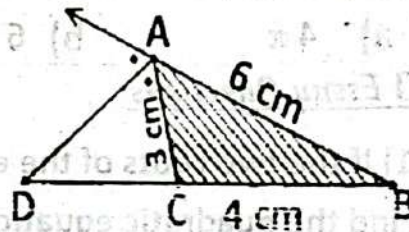
- a) 1
b) 2
c) 1.5
d) 1.5 or 1



(22) In the opposite figure:

$(AD)^2 = \dots\dots \text{ cm}$

- a) 12
b) 18
c) 14
d) 24

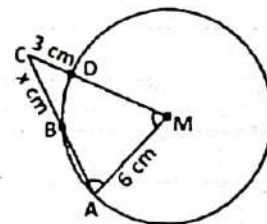


(23) In the opposite figure:

$m(\angle AMC) = m(\angle MAC)$

$X = \dots\dots\dots$

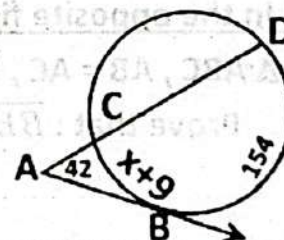
- a) 3
b) 5
c) 4
d) 6



(24) In the opposite figure:

$m(\widehat{DB}) = 154^\circ$, $m(\widehat{BC}) = (X + 9)^\circ$
then $X = \dots\dots\dots^\circ$.

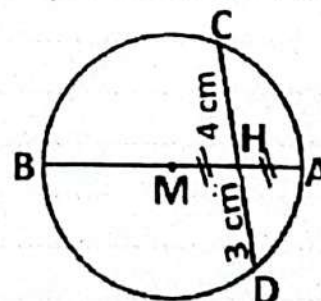
- a) 84
b) 61
c) 73
d) 21



(25) In the opposite figure:

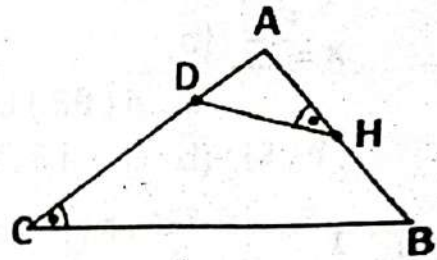
Circumference of a circle = $\dots\dots\dots\pi \text{ Cm}$.

- a) 4
b) 8
c) 16
d) 20



- (26) In the opposite figure:
all the following is right except

- a) $\triangle ABC \sim \triangle ADH$
b) BCDH is cyclic
c) $\frac{AB}{AC} = \frac{AH}{AD}$
d) $AH \times AB = AD \times AC$



- (27) If $P_M(A) = -13$ and $MA = 6$ cm., its area of this circle = Cm^2

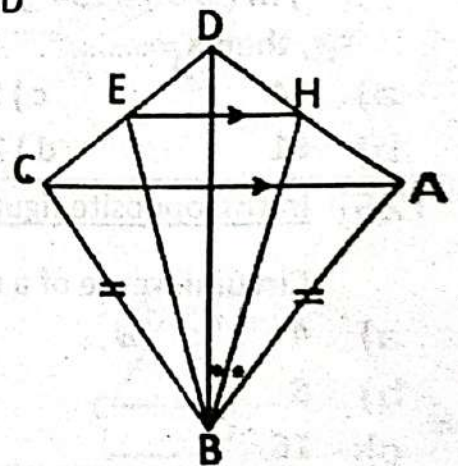
- a) 4π b) 6π c) 36π d) 49π

☐ Essay Questions

- [1] If the two roots of the equation: $X^2 + X - 5$ are L, m ,
Find the quadratic equation whose two roots are $\frac{L}{m}, \frac{m}{L}$

- [2] In the opposite figure:

In $\triangle ABC$, $AB = AC$, $\overline{HE} \parallel \overline{AC}$, $\overline{BH}$ is bisects $\angle ABD$
Prove that : $\overline{BE}$ is bisects $\angle CBD$



حمل الآن

مجاناً وحصرياً

امتحانات رقم (3)

الترم الاول





Model Exam of First year secondary First Term 2023- 2024
Mathematics Time: 3 hours

نموذج استرشادي رياضيات للصف الأول الثانوي للعام الدراسي ٢٠٢٣ / ٢٠٢٤م

First: Choose the correct answer

- 1) Solution set of the inequality $x^2 + 49 > 14x$, in R is
- A $\{7\}$ B $\emptyset$ C R D $R - \{7\}$
- 2) If $x + yi = 5 + i$, then: $xy = \dots\dots\dots$
- A 6 B 5 C 4 D 3
- 3) Solution set of the equation $x^2 + 25 = 0$, in the set of complex numbers is
- A $\{-5i\}$ B $\{5i\}$ C $\{5i, -5i\}$ D $\emptyset$
- 4) If one of the roots of the equation $x^2 + (k + 5)x - 9 = 0$, is equal to the additive inverse of the other root, then: $k = \dots\dots\dots$
- A -5 B 3 C 5 D -3
- 5) If L, M are the roots of the quadratic equation $x^2 + 4x + 1 = 0$, then $L^2 + 4L + 1 = \dots\dots\dots$
- A -1 B 1 C -4 D zero



6) $i^{24} + i^{30} = \dots$

- A -1 B $zero$ C $-i$ D 1

7) If $x - 2i = 3 + yi$, then the conjugate of the number: $x + yi = \dots\dots\dots$

- A $-3 + 2i$ B $3 - 2i$ C $3 + 2i$ D $-3 - 2i$

8) If the roots of the quadratic equation $3x^2 - 6x + m = 0$ are real roots, then $m \in \dots\dots\dots$

- A $]-\infty, 3]$ B $\{9\}$ C $]-\infty, 3[$ D $\{4\}$

9) If the terminal side of the acute angle θ in the standard position intersects the unit circle at the point $(\frac{-3}{5}, \frac{4}{5})$, then $\cot \theta = \dots\dots\dots$

- A $\frac{-3}{4}$ B $\frac{3}{5}$ C $\frac{-4}{3}$ D $\frac{3}{4}$

10) $\cos(90^\circ - \theta) \times \csc(\theta) = \dots\dots\dots$

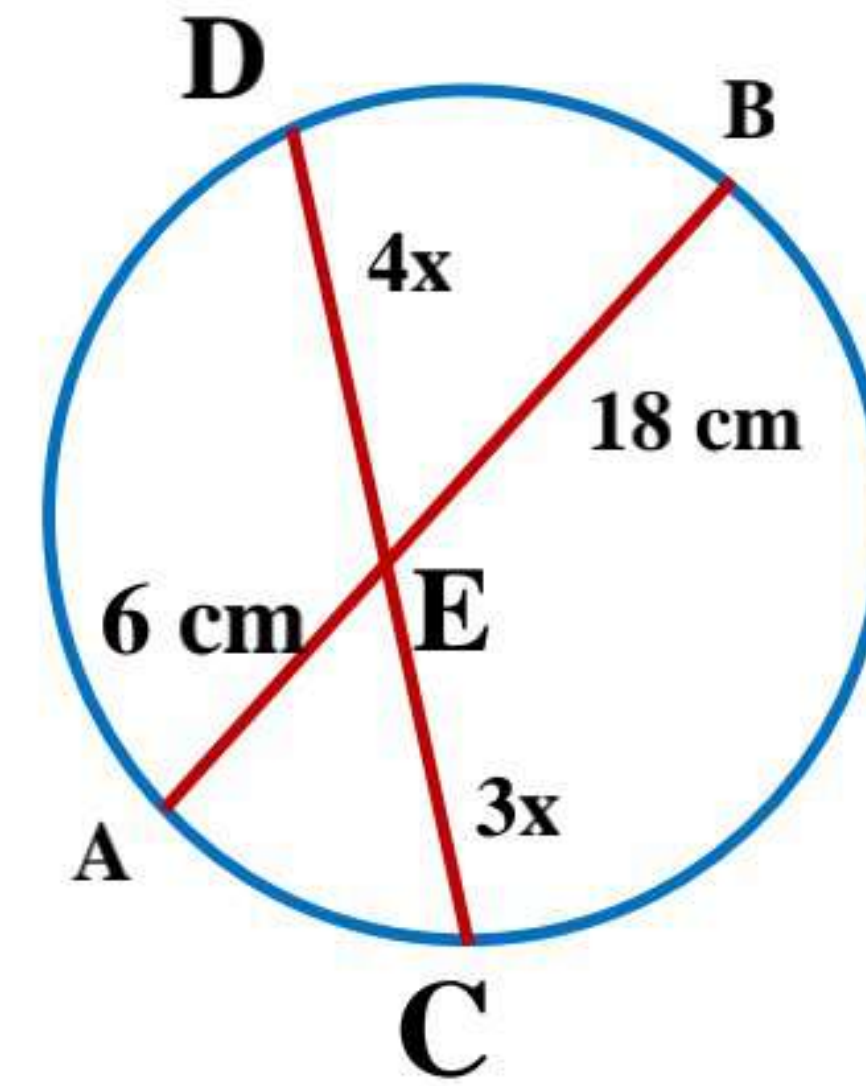
- A 1 B -1 C $zero$ D $\tan(\theta)$



- 11) The angle whose measure is $\frac{-9\pi}{4}$ lies in the quadrant.
A third B fourth C second D first
- 12) The length of the arc which is opposite to a central angle of measure 135° in a circle of diameter 16 cm equals cm
A 12 B 12π C 6π D 6
- 13) If $\csc(\theta) = 2$, where θ is the measure of a positive acute angle, then $\theta = \dots\dots$
A 60° B 30° C 15° D 45°
- 14) $\sin\theta + \cos(270^\circ + \theta) = \dots\dots$
A $2\sin\theta$ B zero C $\sin\theta \cos\theta$ D 1
- 15) If $\triangle XYZ \sim \triangle ABC$, $XY=3$ cm, $AB=6$ cm, $BC=8$ cm, then $YZ=\dots\dots$ cm
A 2.5 B 4 C 3 D 2
- 16) If the ratio between the perimeter of two similar polygons is 3 : 4 and the sum of their areas 150 cm^2 , then area of the greater polygon equals cm^2
A 73 B 52 C 96 D 54



- 17) In the opposite figure:
If $\overline{AB} \cap \overline{CD} = \{E\}$
, $AE=6$ cm , $EB= 18$ cm ,
 $CE= 3x$ cm, $ED=4x$ cm,
Then $CD=.....$ cm



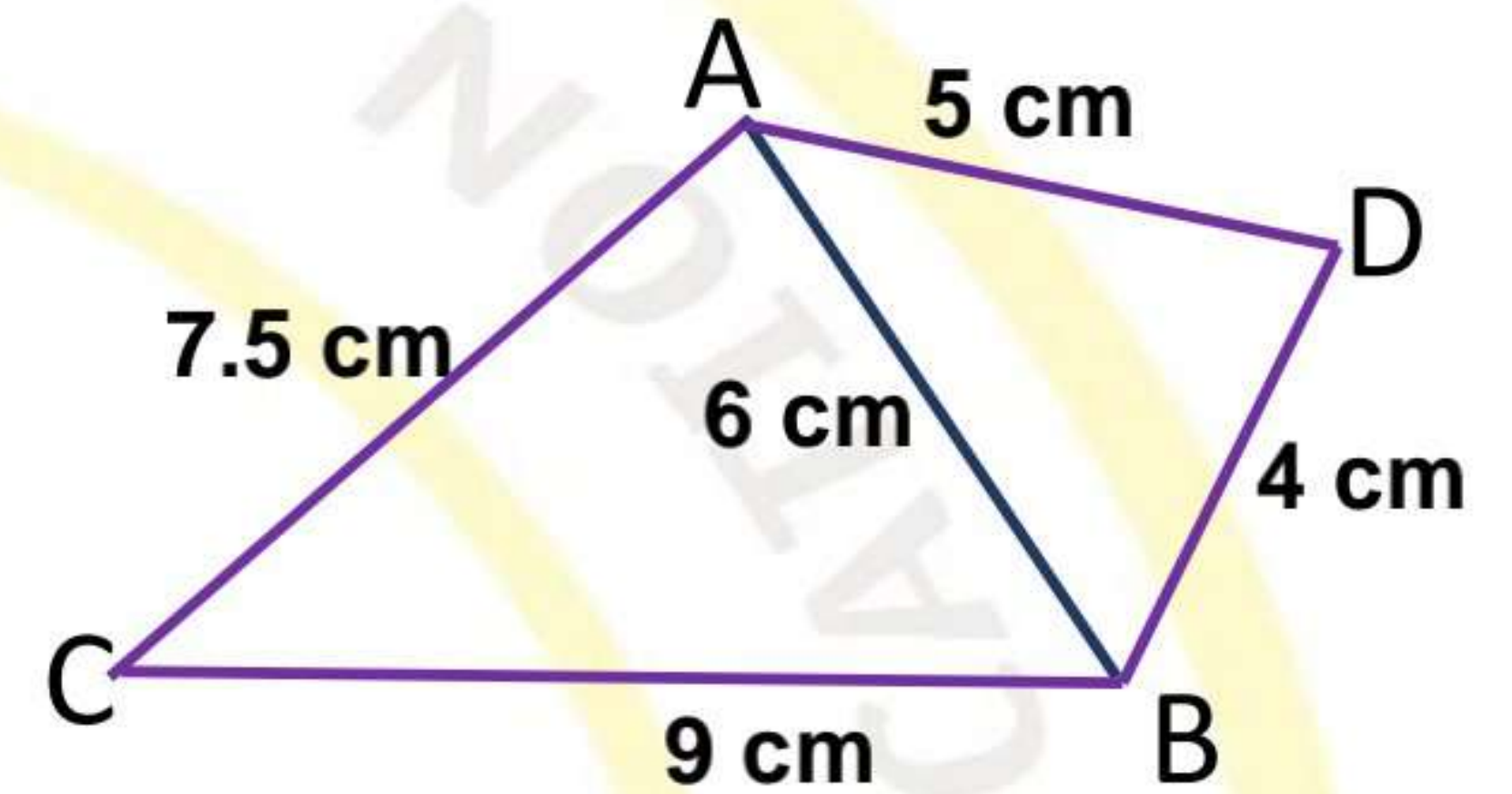
A 21

B 9

C 18

D 6

- 18) In the opposite figure:
 $m(\angle BAC) = \dots$



A

$m(\angle DBA)$

B

$m(\angle BAD)$

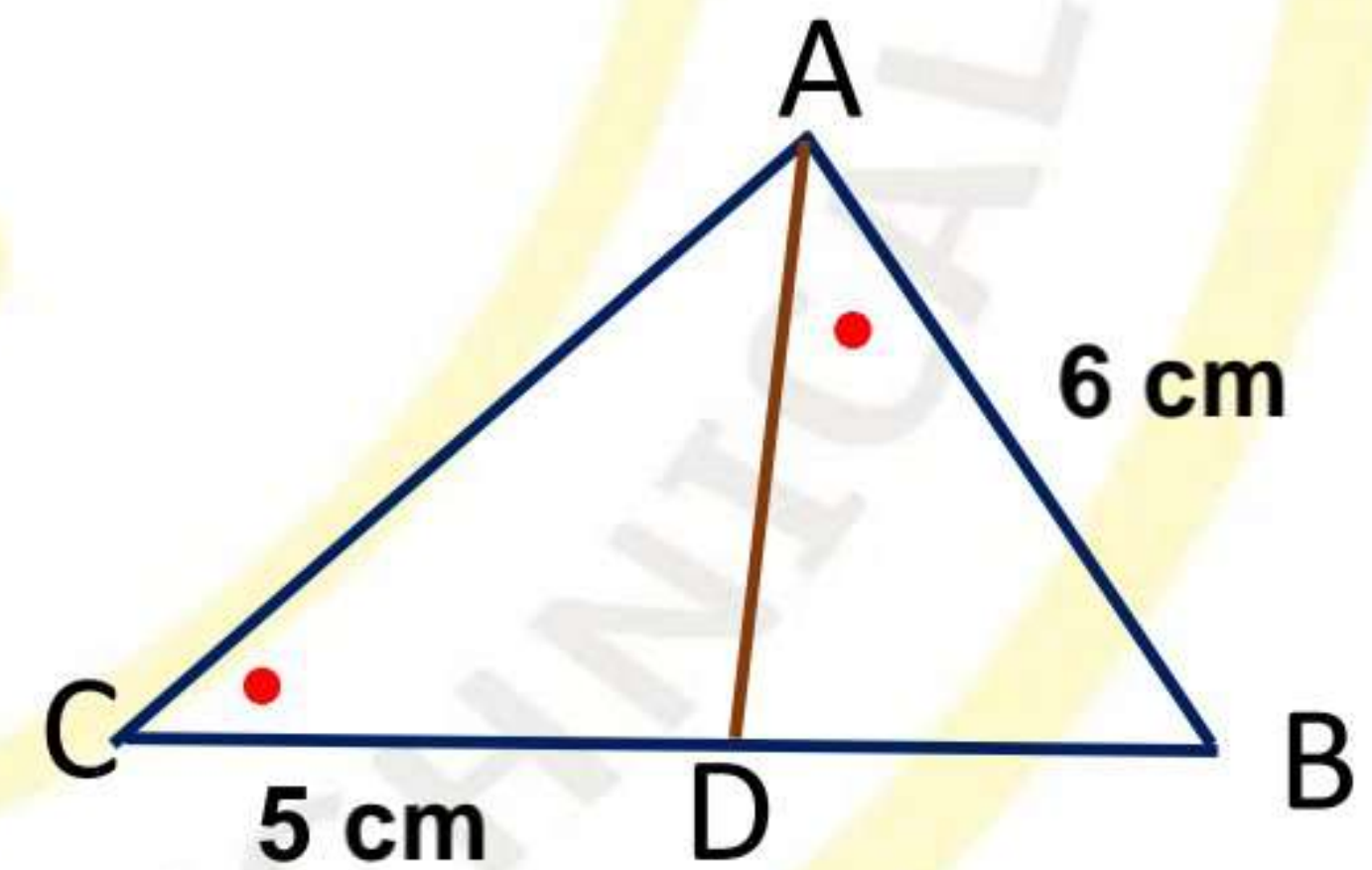
C

$m(\angle BDA)$

D

$m(\angle ACB)$

- 19) In the opposite figure:
 ABC is a triangle in which
 $D \in \overline{BC}$,
 $m(\angle BAD) = m(\angle ACB)$,
 $AB= 6$ cm , $CD= 5$ cm, then :
 $BC=$ cm



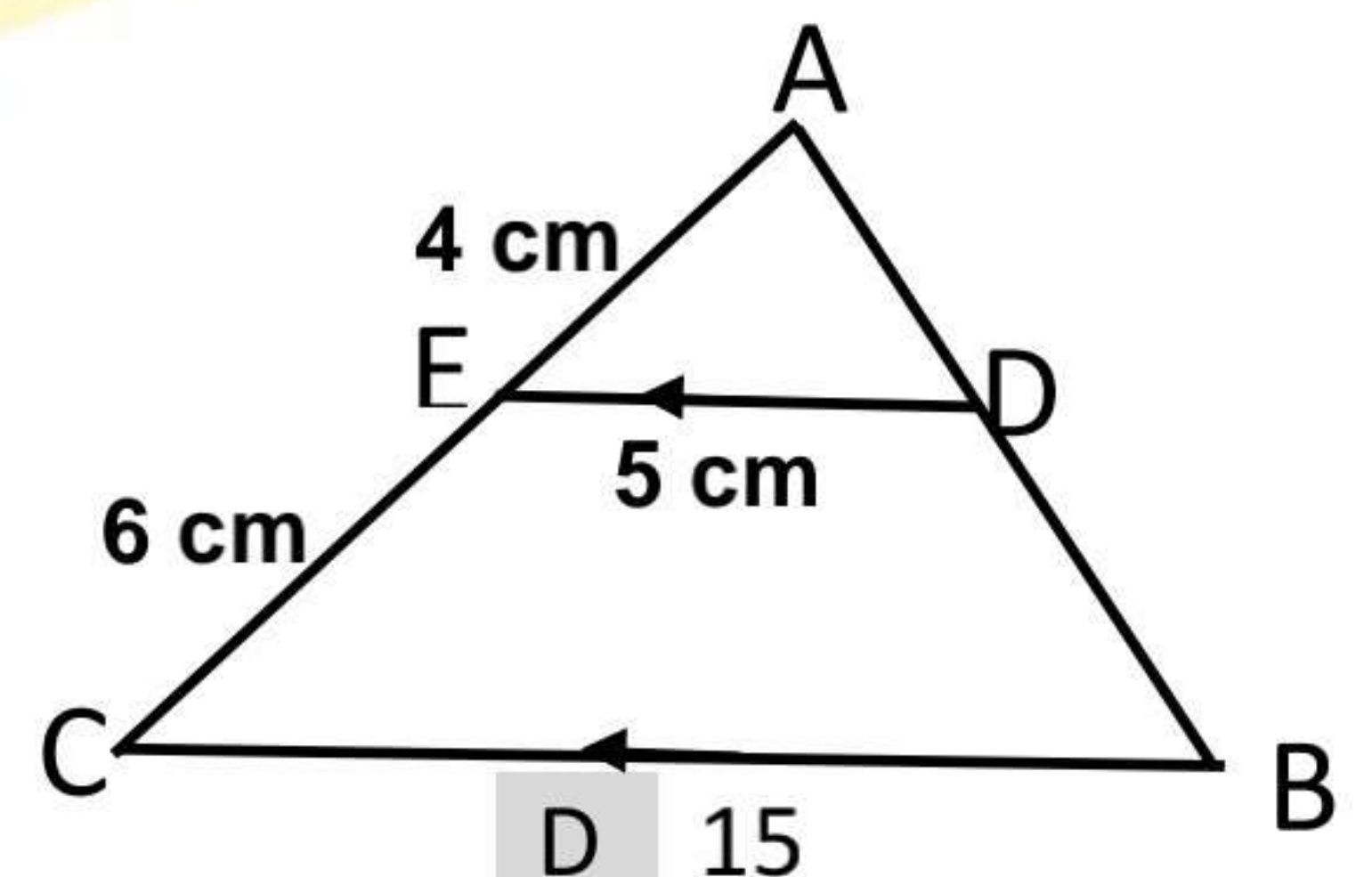
A 6

B 4

C 5

D 9

- 20) In the opposite figure:
 ABC is a triangle in which
 $E \in \overline{AC}$, $D \in \overline{AB}$,
 $\overline{ED} \parallel \overline{BC}$, $AE= 4$ cm , $EC= 6$ cm,
 $ED=5$ cm, then :
 $BC=$ cm



A 10

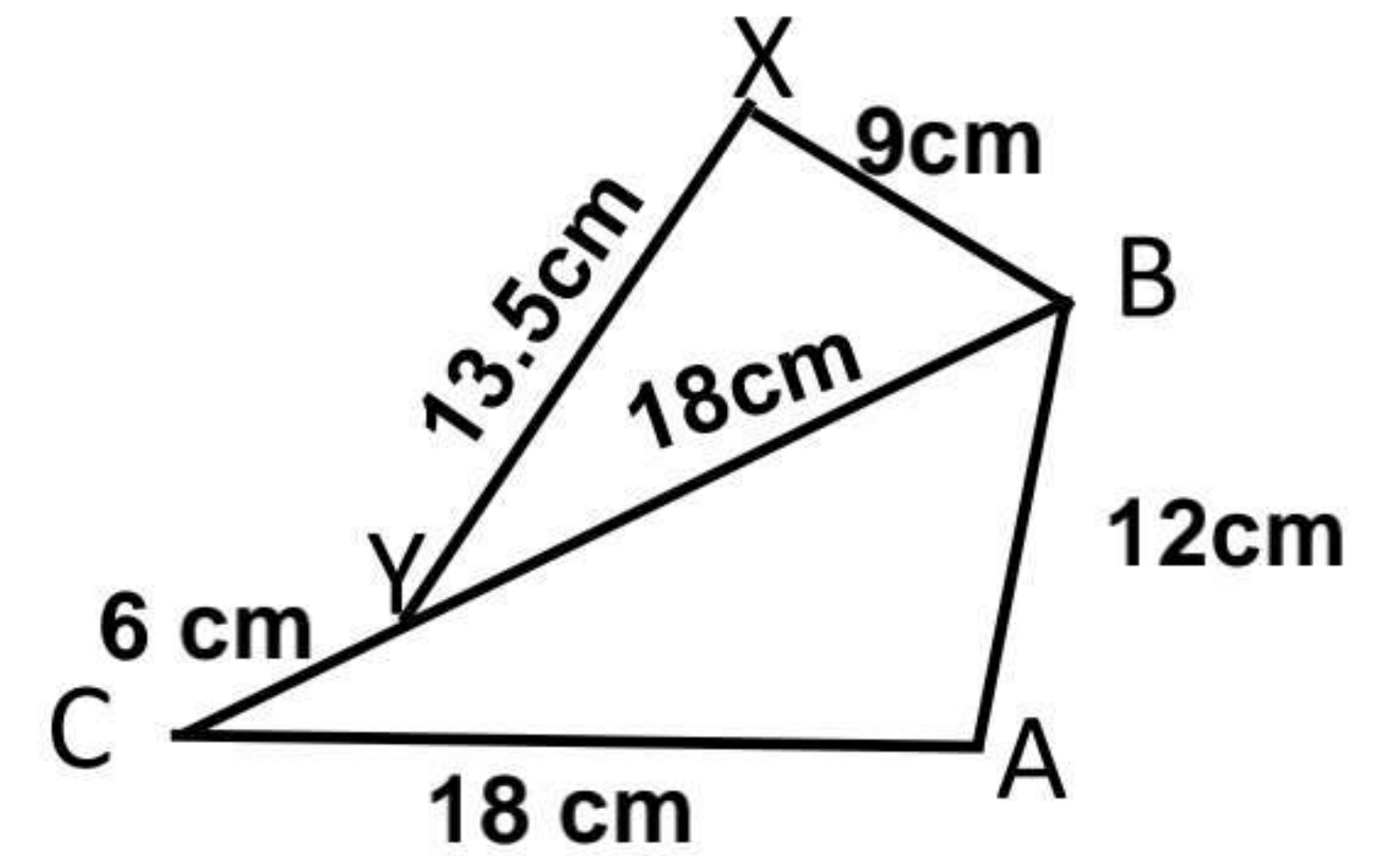
B 10.5

C 12.5

D 15



- 21) In the opposite figure:
 $m(\angle ABC) = \dots\dots$

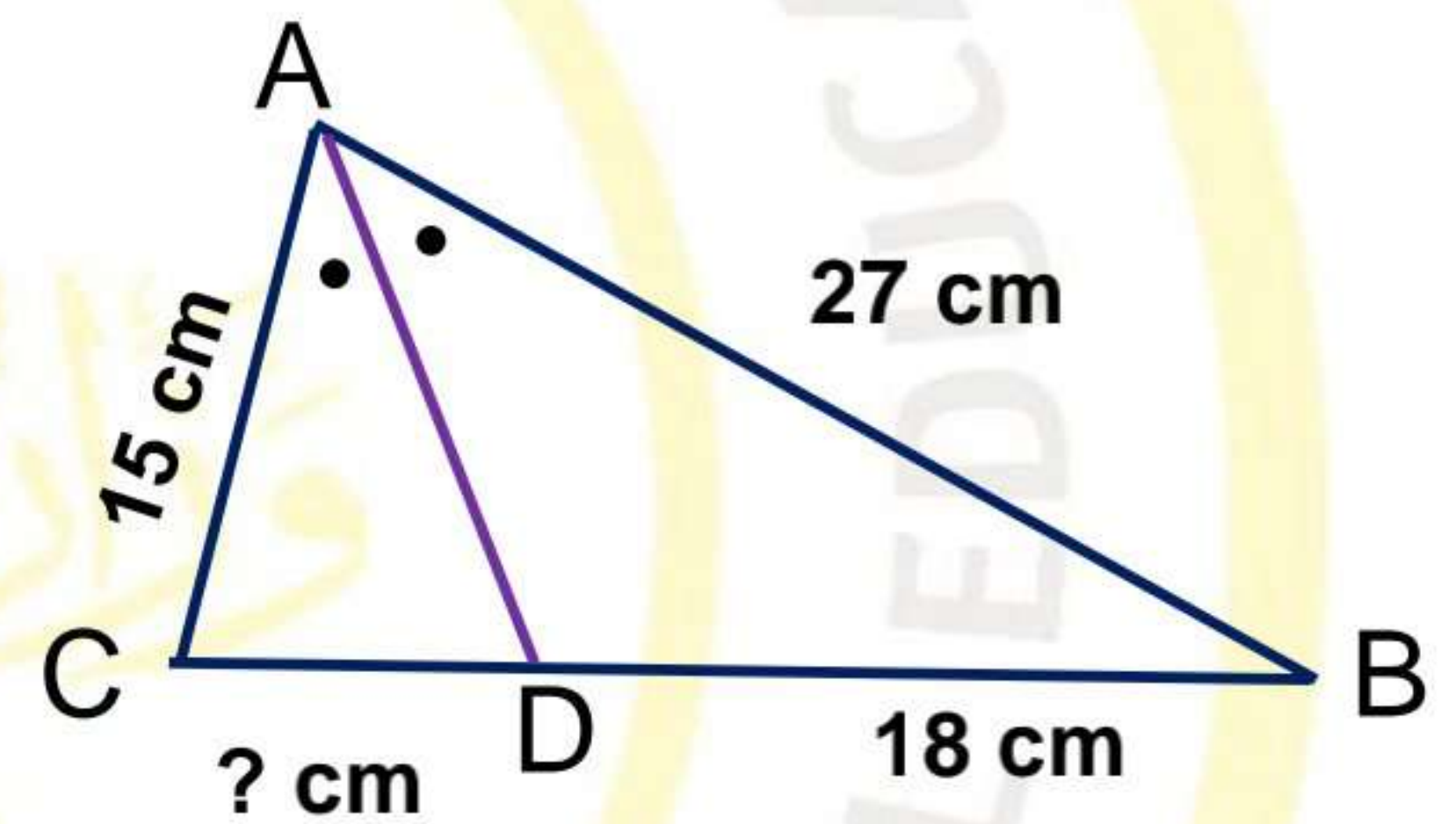


- A $m(\angle BXY)$ B $m(\angle BAC)$ C $m(\angle ACB)$ D $m(\angle XBY)$

- 22) If the radius of a circle M equals 3 cm, A is a point lies in its plane such that $MA = 4$ cm,
Then $P_M(A) = \dots\dots\dots$

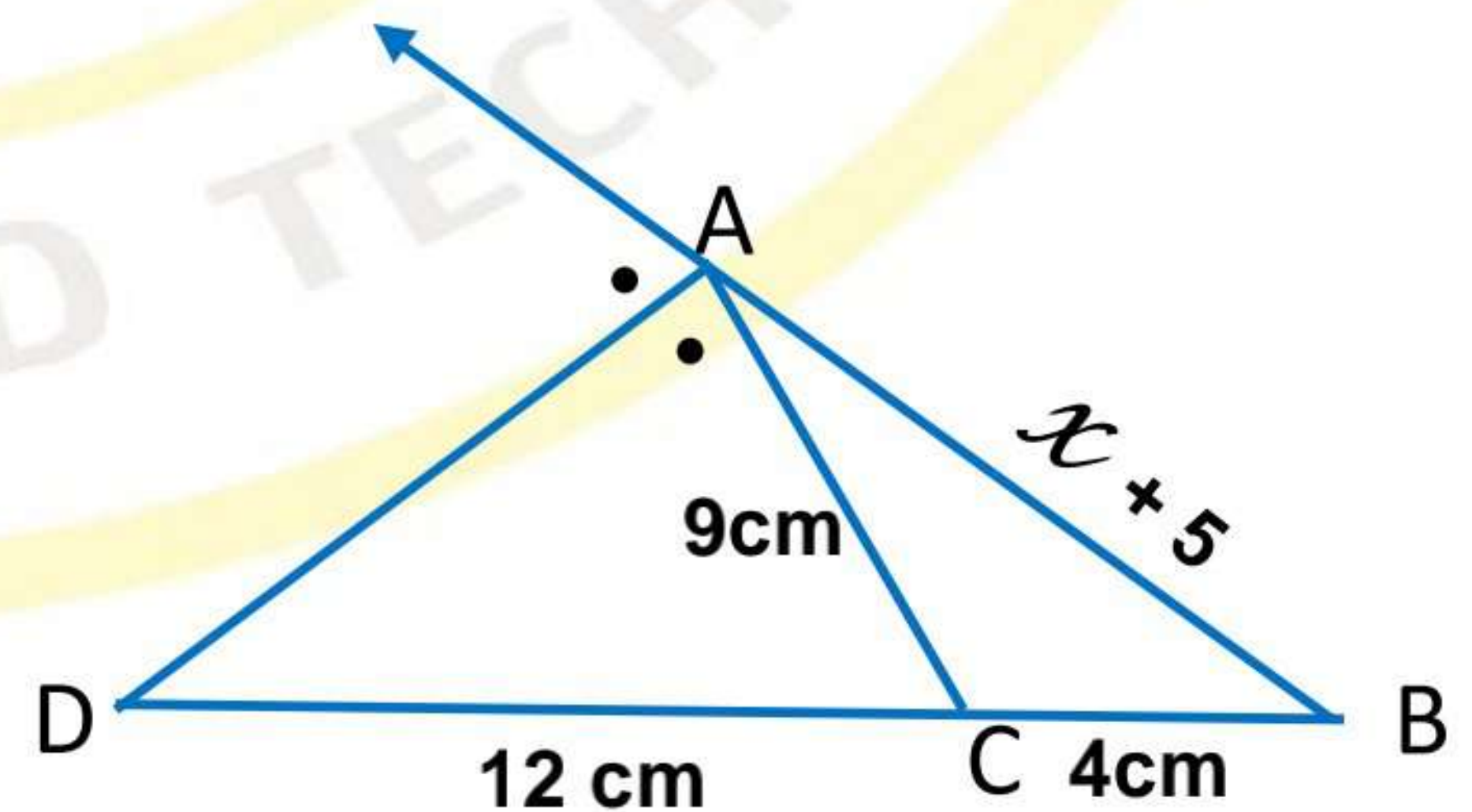
- A 7 B -7 C 9 D 10

- 23) In the opposite figure:
 $CD = \dots\dots\dots$ cm



- A 6 B 10 C 5 D 15

- 24) In the opposite figure:
 $x = \dots\dots\dots$ cm

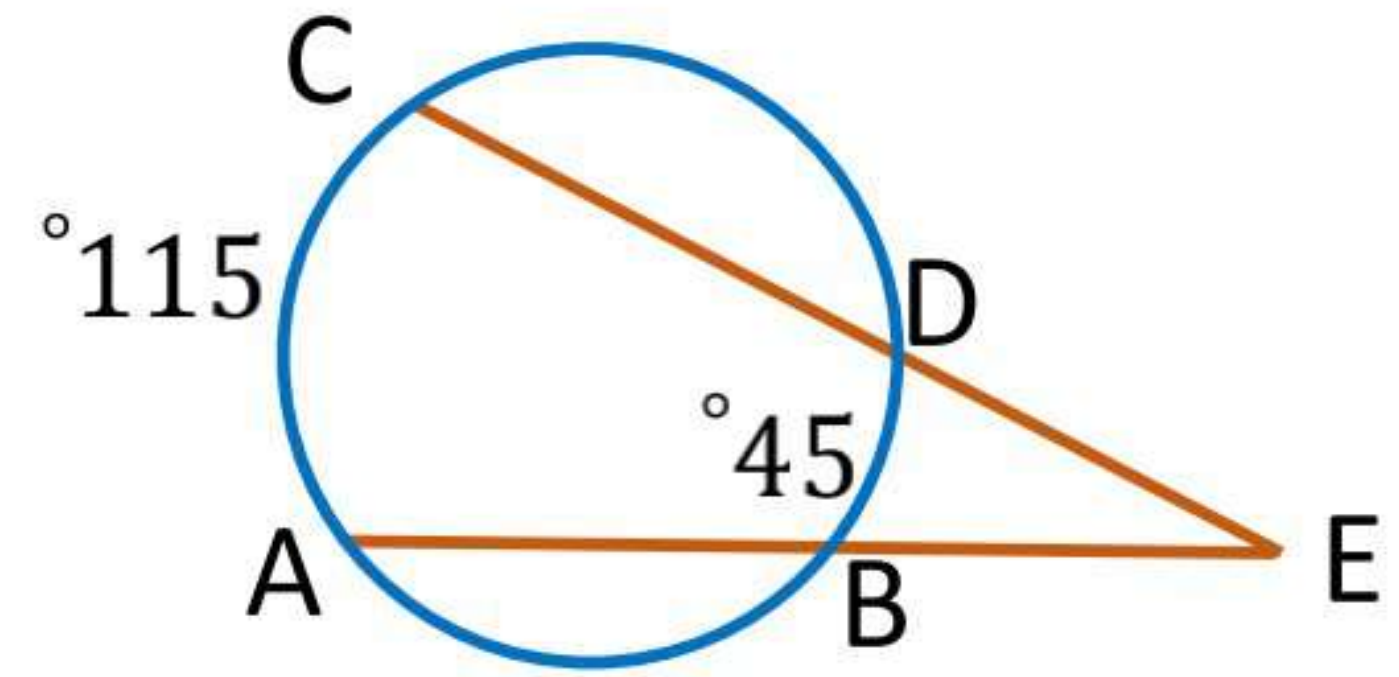


- A 8 B 16 C 7 D 12



25) In the opposite figure:

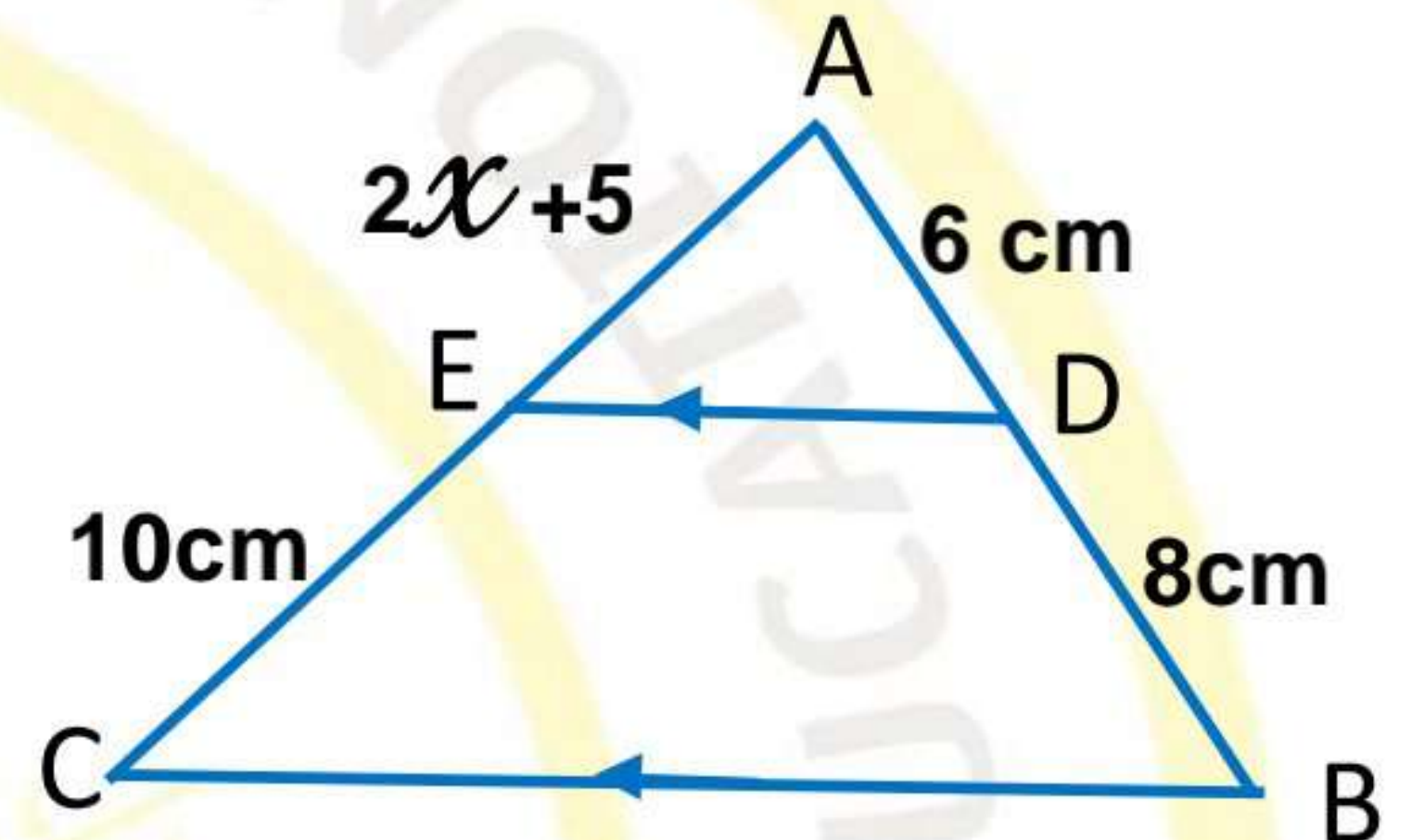
$$m(\angle E) = \dots\dots$$



- A 90° B 60° C 45° D 35°

26) In the opposite figure:

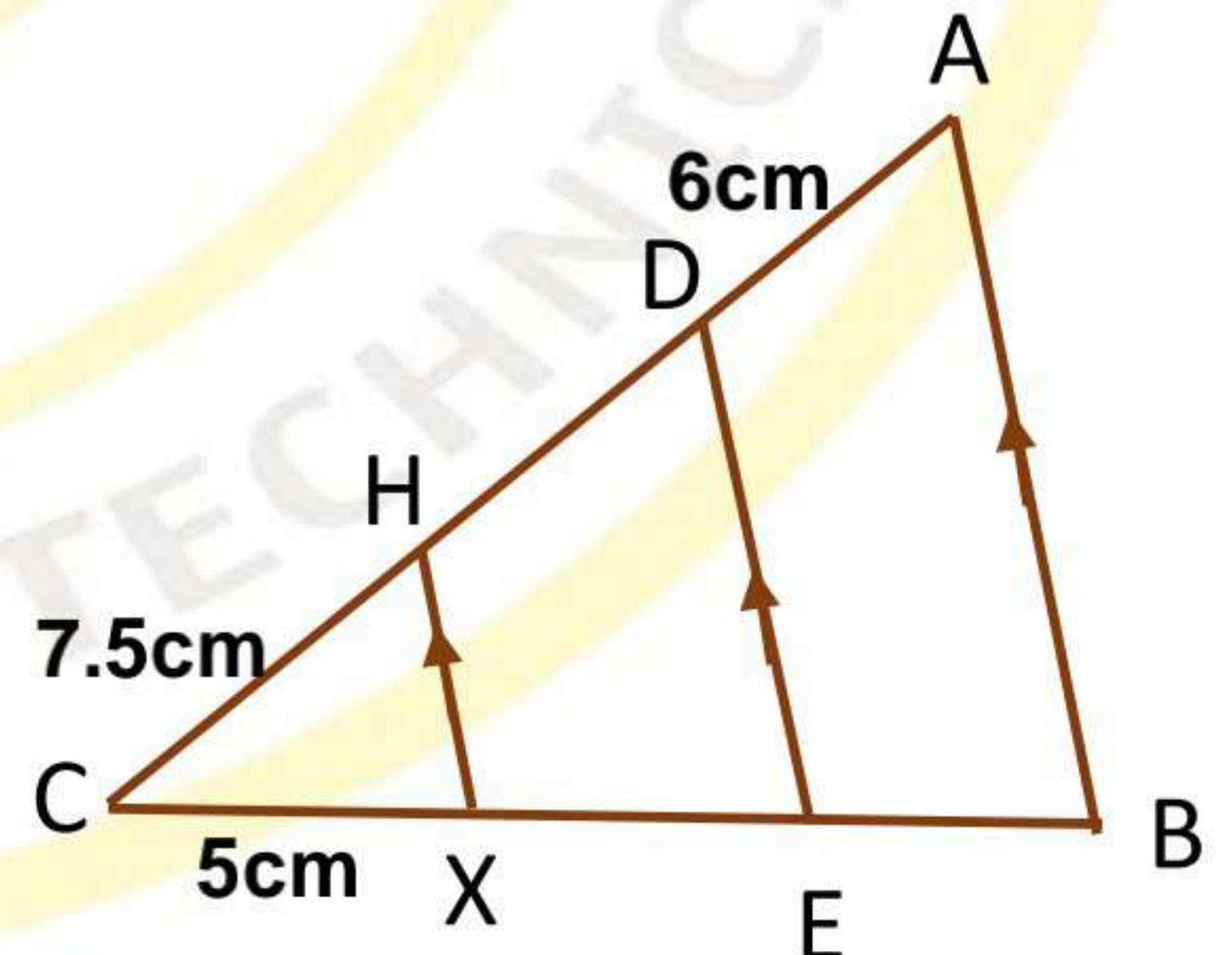
$$x = \dots\dots\dots \text{cm}$$



- A 1 B 1.25 C 1.5 D 2

27) In the opposite figure:

$$BE = \dots\dots\dots \text{cm}$$



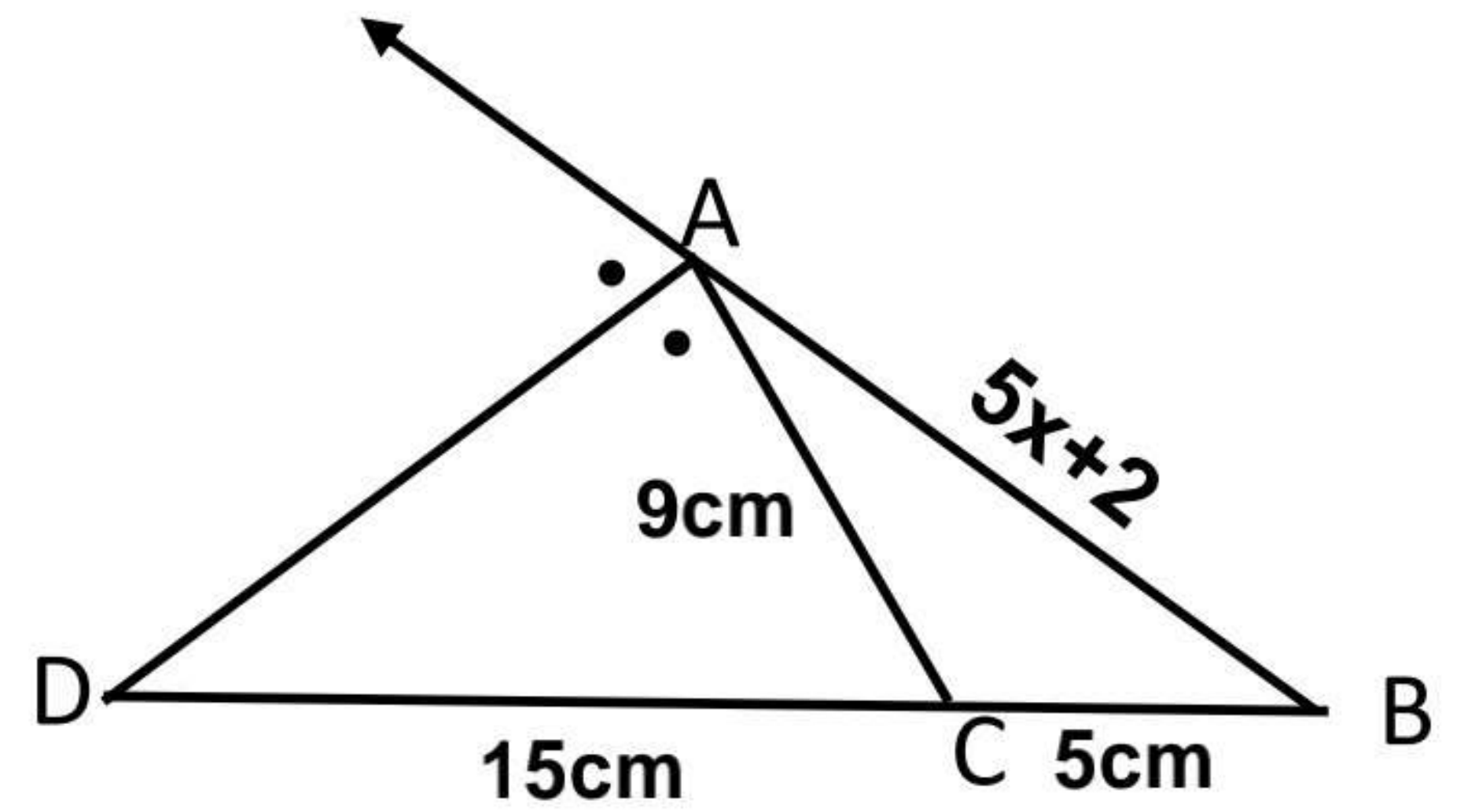
- A 8 B 6 C 4 D 2



Second:

1) In the opposite figure:

$\overrightarrow{AD}$ bisects the exterior $\angle A$
 $AB=5x+2$, $AC=9\text{cm}$,
 $BC=5\text{cm}$ and $DC=15\text{ cm}$
Find the length of AD



Solution

**2) If L, M are the roots of the quadratic equation $x^2 - 5x + 7 = 0$,
Form the equation whose roots are: L^2, M^2**

Solution



Model Answer Exam of First year secondary First Term 2023- 2024
Mathematics Time: 3 hours

نموذج اجابة استرشادى رياضيات للصف الأول الثانوى للعام الدراسى ٢٠٢٣ / ٢٠٢٤ م

First

Question	1	2	3	4	5	6	7	8	9
Answer	D	B	C	A	D	B	C	A	A
Marks	1	1	1	1	1	1	1	1	1

Question	10	11	12	13	14	15	16	17	18
Answer	A	B	C	B	A	B	C	A	C
Marks	1	1	1	1	1	1	1	1	1

Question	19	20	21	22	23	24	25	26	27
Answer	D	C	D	A	B	C	D	B	C
Marks	1	1	1	1	1	1	1	1	1

Second

1) $\because \overrightarrow{AD}$ bisects the exterior $\angle A$

$$\therefore \frac{5x+2}{9} = \frac{20}{15}$$

$$\therefore x = 2cm \quad \therefore AB = 12 cm$$

$$AD = \sqrt{BD \times DC - AB \times AC}$$

$$= \sqrt{20 \times 15 - 12 \times 9} = 8\sqrt{3} cm$$

1

1

1

$$2) \begin{cases} L + M = 5 \\ LM = 7 \end{cases}$$

1/2

$$\begin{cases} L^2 + M^2 = (L + M)^2 - 2LM = 11 \end{cases}$$

1/2

$$\begin{cases} L^2 M^2 = (LM)^2 = 49 \end{cases}$$

1/2

The quadratic equation $x^2 - 11x + 49 = 0$,

1/2

حمل الآن

مجانا وحصريا

امتحانات رقم (4)

الترم الاول



TEST

1

Answer the following questions :



1) If $\tan (180^\circ + \theta) = 1$ where θ is the smallest positive angle, then $\theta = \dots \dots \dots$

(A) 60°

(B) 30°

(C) 45°

(D) 135°

2) In the opposite figure :

If B is the midpoint of $\overline{CE}$

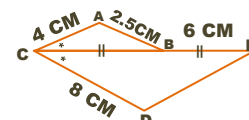
, then $DE = \dots \dots \dots$ cm

(A) 4

(B) 5

(C) 6

(D) 7



3) In the opposite figure:

M is the centre of semi - circle

, then $x = \dots \dots \dots$ cm

(A) 5

(B) 7

(C) 8

(D) 12



4) The solution set of the inequality $(x - 3)(x - 7) < 0$ in $\mathbb{R}$ is $\dots \dots \dots$

(A) $\{3, 7\}$

(B) $]3, 7[$

(C) $[3, 7]$

(D) $\mathbb{R} - [2, 5]$

5) The exterior bisector at the vertex of an isosceles triangle $\dots \dots \dots$ to the base.

(A) parallel

(B) perpendicular

(C) bisects

(D) equal

6) In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two tangents to the circle

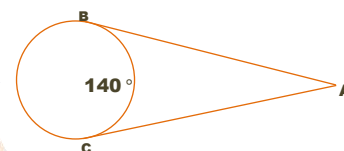
$m(\widehat{BC}) 140^\circ$, then $m(\angle A) = \dots \dots \dots$

(A) 30°

(B) 40°

(C) 60°

(D) 80°



7) The roots of the equation: $kx^2 - 12x + 9 = 0$ are equal if $\dots \dots \dots$

(A) $k > 4$

(B) $k < 4$

(C) $k = 4$

(D) $k = 9$

8) If the terminal side of a positive angle θ in standard position intersects the unit circle at the point $(-x, x)$ where $x > 0$ find the value of x , then find:

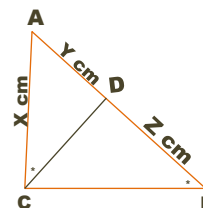
$$2 \sin (270^\circ - \theta) - \csc \theta$$

9 In the opposite figure:

$$\text{If } x^2 - y^2 = 16$$

, then $yz = \dots\dots\dots \text{cm}^2$

- (A) 4 (B) 8
(C) 12 (D) 16



10 The simplest form of the imaginary number i^{42} is

- (A) 1 (B) -1 (C) i (D) -i

11 In $\triangle ABC$, $D \in \overline{AB}$ where $AD = 5 \text{ cm.}$, $DB = 3 \text{ cm.}$

, $E \in \overline{AC}$ where $AE = 4 \text{ cm.}$, $EC = 6 \text{ cm.}$ Prove that:

[1] $\triangle ADE \sim \triangle ACB$

[2] $DBCE$ is a cyclic quadrilateral.

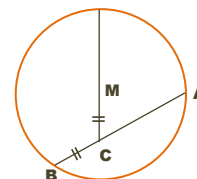
12 In the opposite figure :

The diameter of circle M is 12 cm.

, $MC = CB$ and $AC = (BC + 1) \text{ cm.}$,

then $AB = \dots\dots\dots \text{cm.}$

- (A) 4 (B) 6
(C) 8 (D) 9



13 The degree measure of the angle whose measure $\frac{7\pi}{6}$ equals

- (A) 105° (B) 210° (C) 420° (D) 840°

14 Investigate the sign of the function $f: f(x) = x^2 + 3x - 10$ and illustrate it on a number line, then determine the solution set of the inequality : $x^2 + 3x \leq 10$

15 ABC is a right – angled triangle at A, $AD \perp BC$ where $D \in \overline{BC}$, then $(AB)^2 =$

- (A) $BD \times BC$ (B) $BD \times DC$ (C) $CD \times CB$ (D) $AB \times AC$

16 If the two points $(X_1 \cos X_1) = (X_2 \cos X_2)$ lie on the curve of the function

$f(x) = \cos x$ where x in radian, then the greatest value of the expression

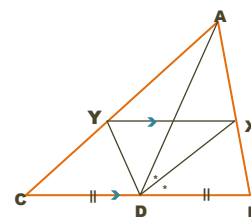
$$(\cos x_1 - \cos x_2) =$$

- (A) 1 (B) 2 (C) zero (D) 180°

17 In the opposite figure :

[1] Prove that: $\overrightarrow{DY}$ bisects $\angle ADC$

[2] Find: $m(\angle XDY)$



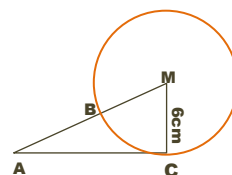
18) In the opposite figure:

$\overline{AC}$ touches the circle M at C

, $MC = 6$ cm. $p_M(A) = 64$

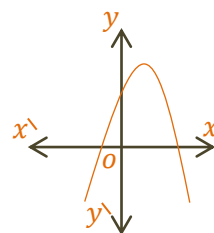
, then $AB = \dots\dots\dots$ cm.

- (A) 3 (B) 4
(C) 5 (D) 6



19) The opposite figure represents the curve $y = ax^2 + bx + c$ which of the following is true $\dots\dots\dots$

- (A) $a > 0, c > 0$
(B) $a > 0, c < 0$
(C) $a < 0, c > 0$
(D) $a < 0, c < 0$



20) If $\cos x = \frac{3}{5}$, $270^\circ < x < 360^\circ$

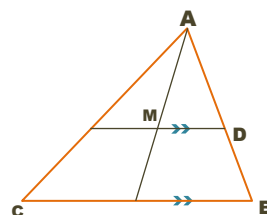
Find the value of : $\sin(180^\circ - X) + \tan(90^\circ - X) + \tan(270^\circ - X)$

21) In the opposite figure:

If M is the point of concurrence of medians

of $\triangle ABC$, and $\overline{DM} \parallel \overline{BC}$, then $\frac{DM}{BC}$

- (A) $\frac{1}{2}$ (B) $\frac{1}{3}$
(C) $\frac{2}{3}$ (D) $\frac{1}{4}$



22) If A and B are the measures of two equivalent angles which of the following represents two equivalent angles also where $C \in \mathbb{Z}$

- (A) $(A + C), (B + C)$ (B) $(A - C), (B - C)$
(C) $(CA), (CB)$ (D) All the previous.

23) If the curve $y = x(a - x)$, which of the following statements is true?

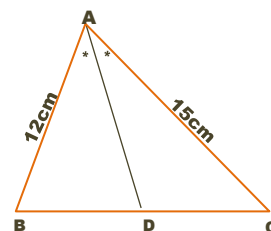
- [1] The curve intersects x - axis at $(0, 0), (a, 0)$
[2] The vertex of the curve is $(\frac{a}{2}, \frac{a}{4})$
[3] The axis of symmetry of the curve is $x = a$
(A) [1], [2] only (B) [1], [3] only
(C) [2], [3] only (D) [1], [2] and [3]

24) In the opposite figure :

If area of $\triangle ABC = 72 \text{ cm}^2$

, then area of $\triangle ADB = \dots\dots\dots \text{cm}^2$

- (A) 24 (B) 28
(C) 32 (D) 40



25) If $\cos \theta > 0$, $\sin \theta < 0$, then θ lies in the quadrant.

- (A) first (B) second (C) third (D) fourth

26) If L, M are the two roots of the equation $x^2 - 5x + 6 = 0$, then the quadratic equation

whose roots are $L + 1, M + 1$ is.....

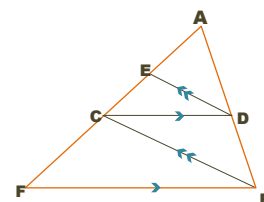
- (A) $x^2 - 7x + 8 = 0$ (B) $(x + 1)^2 - 5(x + 1) + 6 = 0$
(C) $x^2 - 7x + 12 = 0$ (D) $x^2 + 7x - 10 = 0$

27) In the opposite figure:

$\overline{DE} \parallel \overline{BC}$, $\overline{DC} \parallel \overline{BF}$

, then $AE \times AF = \dots\dots\dots$

- (A) $(AC)^2$ (B) $AD \times AB$
(C) $AE \times AC$ (D) $AC \times AB$



28) ABC is right – angled triangle at B, draw $\overline{AD}$ to bisect $\angle A$ and intersects $\overline{BC}$ at D, if the length of $\overline{BD} = 24 \text{ cm}$, $BA:AC = 3:5$, then the perimeter of

$\triangle ABC = \dots\dots\dots \text{cm}$.

- (A) 177 (B) 192 (C) 213 (D) 184

29) If the ratio between the perimeters of two similar polygons is 4: 9, then the ratio between their areas

- (A) 2: 3 (B) 4: 13 (C) 16: 81 (D) 4: 9

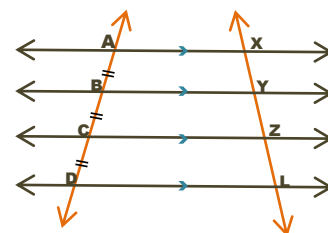
30) In the opposite figure :

$\overline{XA} \parallel \overline{YB} \parallel \overline{ZC} \parallel \overline{LD}$

, $\overline{XL}$, $\overline{AD}$ are two transversals, if $XZ = 7 \text{ cm}$.

, then $XL = \dots\dots\dots \text{cm}$.

- (A) 7 (B) 10
(C) 3.5 (D) 10.5



31) The solution set of the inequality $x(x - 1) > 0$ in R is

- (A) $\{0, 1\}$ (B) $]0, 1[$ (C) $[0, 1]$ (D) $R - [0, 1]$

32 The minimum value of the function $f : f(\theta) = 5 \cos 7\theta \dots\dots\dots$

A 5

B zero

C -5

D -7

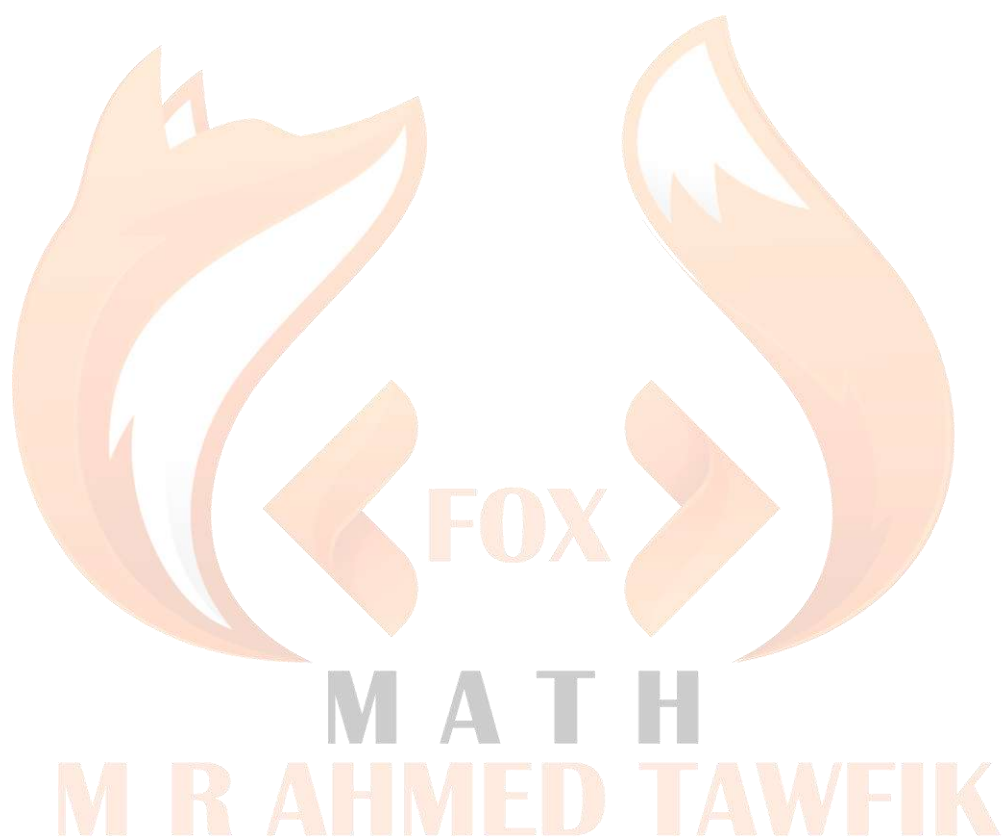
33 If $\sin \theta = -\frac{1}{2}$, $\tan \theta > 0$, then $\theta = \dots\dots\dots$

A 30°

B 150°

C 210°

D 330°



TEST

2

Answer the following questions :



- 1 The triangle in which the measure of two angles is $50^\circ, 60^\circ$ is similar to the triangle in which the measure of two angles is $60^\circ, \dots\dots\dots$

(A) 70° (B) 110° (C) 80° (D) 30°

- 2 If $L, 2 - L$ are the roots of the equation: $x^2 + kX + 6 = 0$, then $\dots\dots\dots$

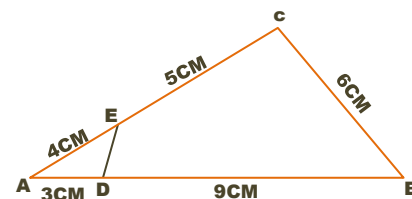
(A) 1 (B) -2 (C) 3 (D) 5

- 3 In the opposite figure:

$E \in AC, D \in AB$ where $AD = 3 \text{ cm}$.

, $DB = 9 \text{ cm}$, $BC = 6 \text{ cm}$, $EC = 5 \text{ cm}$, $EA = 4 \text{ cm}$.

Prove that: $\triangle ADE \sim \triangle ACB$, then find the length of $\overline{ED}$



- 4 The function $f: f(x) = (x - 1)(x + 3)$ is positive in the interval

(A) $[-3, 1]$ (B) $] -3, 1[$
(C) $\mathbb{R} - [-3, 1]$ (D) $\mathbb{R} -] -3, 1[$

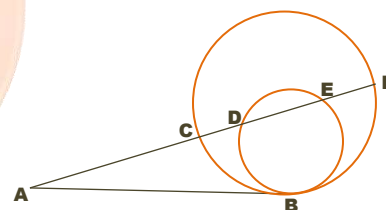
- 5 In the opposite figure :

If $\overline{AB}$ is a common tangent to

two circles touching externally at B

, then $AC: AD = \dots\dots\dots : \dots\dots\dots$

(A) $AB: AF$ (B) $3: 4$
(C) $AD: AF$ (D) $AE: AF$

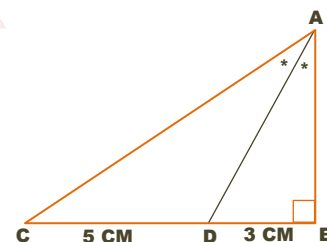


- 6 Find the general solution of the equation: $\tan(\theta + 20^\circ) = \cot(3\theta + 30^\circ)$, then find the values of $\theta \in]0^\circ, 90^\circ[$

- 7 In the opposite figure :

$AB = \dots\dots\dots \text{ cm}$

(A) 4 (B) 5
(C) 6 (D) 7



- 8 If a, b are two rational numbers, then the two roots of the equation: $ax^2 + bx + b - a = 0$ are $\dots\dots\dots$

(A) complex and non - real. (B) complex conjugate.
(C) rationals. (D) equal.

9 In the opposite figure:

$$C \in \overline{BD}, m(\angle D) = m(\angle BAC)$$

$$AB = 6 \text{ cm.}, CD = 5 \text{ cm.}$$

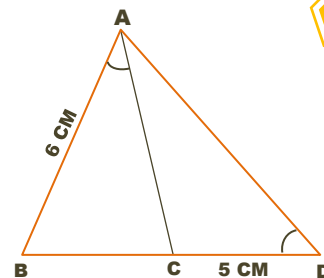
, then $BC = \dots\dots\dots \text{cm.}$

(A) 3

(B) 4

(C) 5

(D) 6



10 If L, M are the two roots of the equation : $x^2 - 2x - 5 = 0$

Form the equation whose roots are $L^2 + 1, M^2 + 1$

11 In the opposite figure :

ABCD is a parallelogram, its area = 40 cm^2

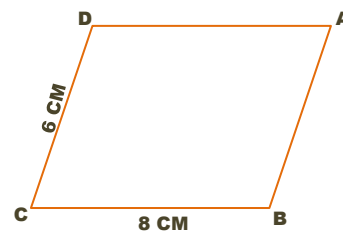
, then $m(\angle A) \cong \dots\dots\dots$

(A) 37°

(B) 56°

(C) 53°

(D) 34°



12 If $P_M(A) = P_N(A)$ where M, N are two circles.....

(A) $AM = AN$

(B) The radius length of M = the radius length of N

(C) A lies on the line of intersection of the two circles.

(D) A lies on the principle axis of the two circle M, N

13 In the opposite figure:

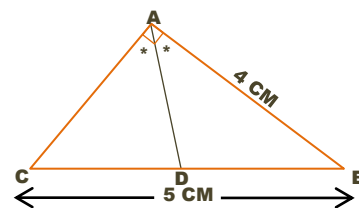
$BC = 5 \text{ cm.}, AB = 4 \text{ cm.}, \overline{AB} \perp \overline{AC}$, then $\frac{BD}{DC} = \dots\dots\dots$

(A) $\frac{4}{5}$

(B) $\frac{3}{5}$

(C) $\frac{3}{4}$

(D) $\frac{4}{3}$



14 The arc length in a circle of radius 6 cm. opposite to central angle of measure $\frac{\pi}{2}$

is $\dots\dots\dots$

(A) $\frac{3\pi}{2} \text{ cm}$

(B) $2\pi \text{ cm}$

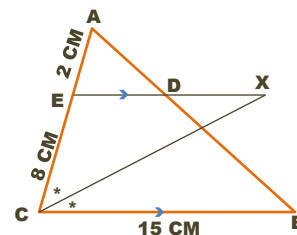
(C) $\frac{5\pi}{2} \text{ cm}$

(D) $3\pi \text{ cm}$

15 In the opposite figure:

If $\overline{CX}$ bisects $\angle ACB$, $\overline{XD} \parallel \overline{BC}$, then $XD = \dots\dots\dots$ cm

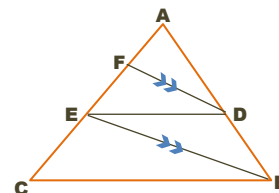
- (A) 3 (B) 4
(C) 5 (D) 6



16 In the opposite figure:

If $\overline{DF} \parallel \overline{BE}$, to prove that $\overline{DE} \parallel \overline{BC}$ it is sufficient to have

- (A) $\frac{AD}{DB} = \frac{3}{4}$ only (B) $AF \times AC = (AE)^2$ only.
(C) (a), (b) together. (D) nothing of the previous.



17 If ABC is right – angled triangle at B, $\sin A + \cos C = 1$, then $\tan C = \dots\dots\dots$

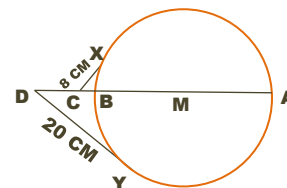
- (A) 1 (B) -1 (C) $\frac{1}{\sqrt{3}}$ (D) $\sqrt{3}$

18 In $\triangle ABC$, $\overline{AD}$ bisects the interior angle and intersects $\overline{BC}$ at D, if $AC = 15$ cm., $AB = 27$ cm., $BD = 18$ cm., calculate the length of $\overline{CD}$ and $\overline{AD}$

19 In the opposite figure:

If $\overline{AB}$ is a diameter in circle M, $\overline{CX}$, $\overline{YD}$ are two tangent segments to the circle M, $AB = 30$ cm., $CX = 8$ cm., $DY = 20$ cm., then $DC = \dots\dots\dots$ cm.

- (A) 2 (B) 6 (C) 8 (D) 10



20 If the terminal side of an angle 60° in standard position rotates two and quarter revolutions anticlockwise, then the terminal side represents the angle.....

- (A) 60° (B) 120° (C) 150° (D) 240°

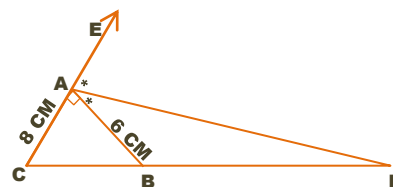
21 The solution set of the equation : $x^2 + 9 = 0$ in the set of complex numbers is

- (A) $\{3, -3\}$ (B) $\{-3i\}$ (C) $\{3i, -3i\}$ (D) $\emptyset$

22 In the opposite figure:

The area of $\triangle ABD = \dots\dots\dots$ cm²

- (A) 36 (B) 48
(C) 54 (D) 72



23 Find the values of X, y that satisfies the equation:

$$\frac{(4 - 3i)(4 + 3i)}{2 + i} = x + yi$$

24 If the solution set of the inequality : $x^2 - 4 \leq x + k$ is $[-2, 3]$, then $k = \dots \dots$

- (A) -6 (B) 1 (C) 2 (D) 10

25 The range of the function $f(\theta) = 3 \sin 2\theta$ is $\dots \dots \dots$

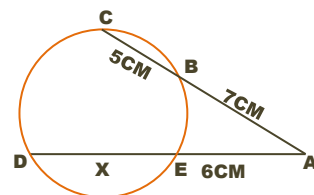
- (A) $[-2, 2]$ (B) $]-2, 2[$ (C) $[-3, 3]$ (D) $]-3, 3[$

26 In the opposite figure :

$AB = 7 \text{ cm.}, BC = 5 \text{ cm.}, AE = 6 \text{ cm.}$

, $DE = x \text{ cm.}$, then the value of $x = \dots \dots \dots \text{ cm.}$

- (A) 5 (B) 14
(C) 12 (D) 8



27 A is a point outside the circle M, $\overline{AB}$ is a tangent to the circle at B, draw $\overline{AD}$ to intersect the circle at C and D, if $m(\widehat{DB}) = 150^\circ$, $m(\widehat{BC}) = 80^\circ$, then $m(\angle A) = \dots \dots \dots^\circ$

- (A) 115 (B) 35 (C) 70 (D) 60

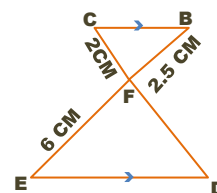
28 The terminal side of angle θ in standard position intersects the unit circle at point $B(x, \frac{3}{5})$ where $x < 0$, then $\sin(90^\circ + \theta) = \dots \dots \dots$

- (A) -0.8 (B) -0.6 (C) 0.8 (D) 0.6

29 In the opposite figure:

$FD = \dots \dots \dots \text{ cm.}$

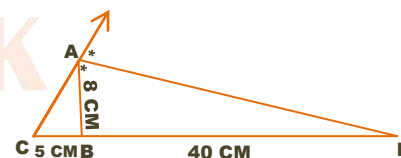
- (A) 3.6 (B) 4
(C) 4.2 (D) 4.8



30 In the opposite figure:

$AE = \dots \dots \dots \text{ cm.}$

- (A) 32 (B) 45
(C) 48 (D) $24\sqrt{3}$



31 If $\sin x = \cos y$, then $\sin(x + y) = \dots \dots \dots$

- (A) 1 (B) zero (C) -1 (D) otherwise.

32 If one of the roots of the equation $x^2 - (m + 3)x + 3 = 0$ is additive inverse of the other, then $m = \dots \dots \dots$

- (A) 3 (B) -3 (C) zero (D) otherwise.

33 The two roots of the equation: $ax^2 + bx + c = 0$ are real equal if $b^2 = \dots \dots \dots$

- (A) $2ac$ (B) ac (C) $4ac$ (D) $-4ac$

TEST

3

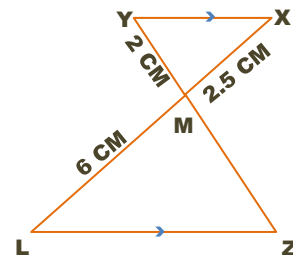
Answer the following questions :



1 In the opposite figure:

ZM = cm.

- (A) 3.6 (B) 4
(C) 4.2 (D) 4.8



2 The simplest form of the imaginary number $i^{73} = \dots\dots\dots$

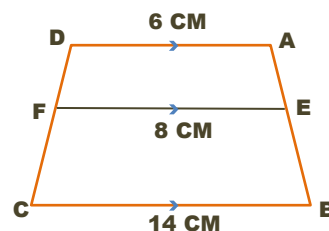
- (A) -1 (B) 1 (C) i (D) -i

3 The ratio between the length of two corresponding sides of two similar polygons is 5:3 If the difference between their areas is 32 cm^2
Find the area of each polygon.

4 In the opposite figure:

$\frac{AE}{EB} = \dots\dots\dots$

- (A) $\frac{3}{4}$ (B) $\frac{4}{7}$
(C) $\frac{3}{7}$ (D) $\frac{1}{3}$



5 If one of the two roots of the equation: $x^2 - (m + 2)x + 3 = 0$ is additive inverse of the other, then $m = \dots\dots\dots$

- (A) -3 (B) -2 (C) 2 (D) 3

6 Solve the following inequality in R: $(x + 3)^2 \leq 10 - 3(x + 3)$

If polygon M_1 is magnification of polygon M_2 and k is the ratio of magnification, then.....

- (A) $k > 1$ (B) $k < 1$ (C) $k = 0$ (D) $0 < k < 1$

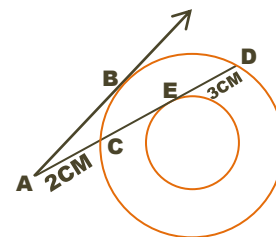
8 The solution set of the equation $x^2 = X$ in R is

- (A) {0} (B) {1} (C) {-1, 1} (D) {0, 1}

9 In the opposite figure:

AB = cm.

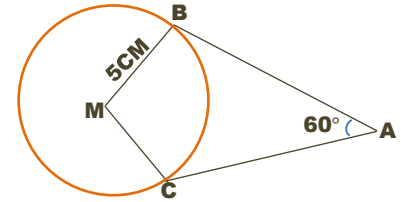
- (A) 4 (B) 5
(C) 6 (D) 8



10 In the opposite figure :

$\overline{AB}, \overline{AC}$ are two tangent segments to the circle M at B and C
 $m(\angle A) = 60^\circ, MB = 5 \text{ cm}$.

Find the length of the minor arc $\widehat{BC}$



11 If $\overline{AB}$ is a tangent to circle M at point B and $P_M(A) = 25 \text{ cm}^2$, then $AB = \dots \text{ cm}$

- (A) 5 (B) 10 (C) 15 (D) 25

12 If L, M are the two roots of the quadratic equation $(x - a)(x - b) = k$
 , then the quadratic equation whose roots a, b is

- (A) $(x - L)(x - M) = 0$
 (B) $(x - L)(x - M) + k = 0$
 (C) $(x - L)(x - M) = k$
 (D) $x^2 - (L + M)x + k = 0$

13 The radian measure of central angle opposite to an arc of length 3 cm.
 in a circle its diameter length 4 cm. is.....

- (A) $(\frac{2}{3})^{\text{rad}}$ (B) $(\frac{3}{2})^{\text{rad}}$ (C) 5^{rad} (D) 6^{rad}

14 In the opposite figure :

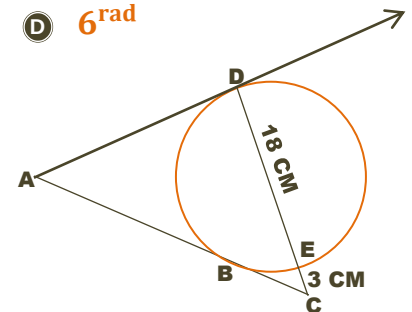
$\overline{AD}, \overline{AB}$ are two tangents to the circle at D, B respectively.

$\overline{CE}$ intersects the circle at E, D

If CE 3 cm., ED 18 cm.

, then $(AC - AD) = \dots \text{ cm}$

- (A) $\sqrt{7}$ (B) $2\sqrt{7}$ (C) $3\sqrt{7}$ (D) $6\sqrt{7}$

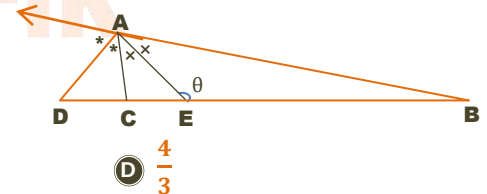


15 In the opposite figure:

If AD 8 cm., AE = 6 cm.

, then $\tan \theta = \dots$

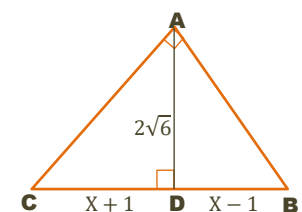
- (A) $-\frac{4}{3}$ (B) $-\frac{3}{4}$ (C) $\frac{3}{4}$ (D) $\frac{4}{3}$



16 In the opposite figure:

By using the shown givens, then $x = \dots$

- (A) 5 (B) 12
 (C) 10 (D) 2.5



17) If $\sin \theta = \cos \theta$ where θ is the measure of an acute positive angle, then $\tan 2\theta = \dots\dots\dots$

- (A) 1 (B) -1 (C) undefined. (D) $\sqrt{3}$

18) Prove without using the calculator :

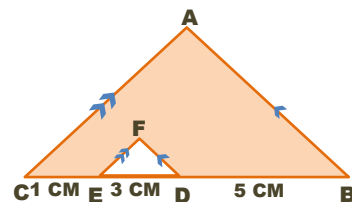
$$\sin (600^\circ) \cos (-30^\circ) + \sin (150^\circ) \cos (240^\circ) = \sin \frac{3\pi}{2}$$

19) In the opposite figure:

If the area of $\triangle DEF = 6 \text{ cm}^2$

, then the area of the shaded area = $\dots\dots\dots \text{cm}^2$

- (A) 27 (B) 36
(C) 48 (D) 54



20) The function $f: f(x) = ax^2 + bx + c$ has one sign in $\mathbb{R}$ when $\dots\dots\dots$

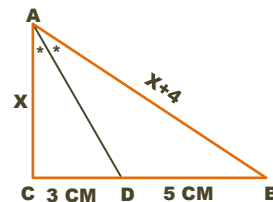
- (A) $b^2 - 4ac > 0$ (B) $b^2 - 4ac < 0$
(C) $b^2 - 4ac = 0$ (D) $b^2 - 4ac \geq 0$

21) $\overline{AD}$ is a median in $\triangle ABC$, $\overline{DX}$ bisects $\angle ADB$ and intersects $\overline{AB}$ at X , $\overline{DY}$ bisects $\angle ADC$ and intersects $\overline{AC}$ at Y , prove that: $\overline{XY} \parallel \overline{BC}$

22) In the opposite figure:

$x = \dots\dots\dots \text{cm}$.

- (A) 3 (B) 4
(C) 5 (D) 6



23) The simplest form of the expression: $\sin (180^\circ + \theta) \times \sec (270^\circ + \theta) = \dots\dots\dots$

- (A) $2 \sin \theta$ (B) 1 (C) -1 (D) $2 \sec \theta$

24) If $(3x - 5)^\circ$ is the smallest positive measure, $(3y - 5)^\circ$ is

the greatest negative measure of two equivalent angles, then $x - y = \dots\dots\dots$

- (A) 360° (B) 180° (C) 120° (D) 90°

25) $\cos^{-1} x + \sin^{-1} x = \dots\dots\dots$

- (A) zero (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{2}$ (D) π

26) If $x + yi = (1 + i)^3$, then $x + y = \dots\dots\dots$

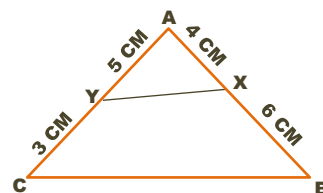
- (A) 4 (B) 2 (C) zero (D) 6

27 In the opposite figure :

ABC is triangle, $X \in \overline{AB}$, $Y \in \overline{AC}$

If XBCY is a cyclic quadrilateral, then

- A $\frac{AX}{AB} = \frac{AY}{AC}$ B $AX \times AB = AY \times AC$
 C $\frac{AX}{XB} = \frac{AY}{YC}$ D $(XY)^2 = AX \times AB$



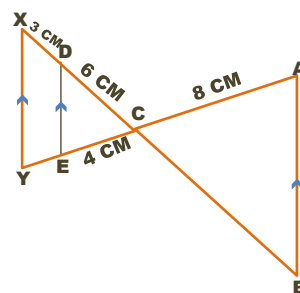
28 In the opposite figure :

$\overline{AB} \parallel \overline{DE} \parallel \overline{XY}$, $\overline{AC} = 8$ cm.

, $CE = 4$ cm., $CD = 6$ cm., $DX = 3$ cm.

then $BC + EY = \dots\dots\dots$ cm.

- A 12 B 15
 C 8 D 14



29 The equation that has the two roots $3i$, $-3i$ is.....

- A $x^2 + 9 = 0$ B $x^2 = 9$ C $x^2 + 3 = 0$ D $x^2 = 3$

30 If $\sin \theta > 0$, $\cos \theta < 0$, then lies in the quadrant.

- A first B second C third D fourth

31 $\sin (90^\circ - \theta) \sec \theta = \dots\dots\dots$

- A 1 B - 1 C zero D 90°

32 If k is the scale factor of similarity between two similar polygons,

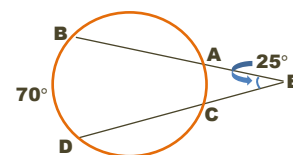
then the two polygons are congruent if

- A $k > 14$ B $0 < k < 1$ C $k = 1$ D $k = 0$

33 In the opposite figure :

$m(\widehat{AC}) \dots\dots\dots^\circ$

- A 20 B 30
 C 40 D 50



TEST

4

Answer the following questions :



1 In the opposite figure :

If $\overline{AD}$ is a tangent to the circle

, $m(\angle A) = 55^\circ$, $m(\widehat{DC}) = (3x - 10^\circ)$

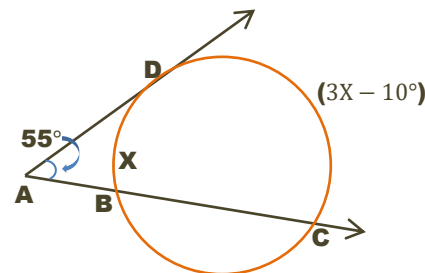
, $m(\widehat{DB}) = x$, then $x = \dots\dots\dots^\circ$

A 120

B 60

C 30

D 15



2 If θ is the measure of an acute angle and $\sin(\theta + 10^\circ) = \cos(50^\circ)$, then $\theta = \dots$

A 30°

B 40°

C 20°

D 50°

3 The ratio between the length of two radii of two circles is 3: 5,

if the area of the smaller circle is 27 cm^2 , then the area of the greater circle equals $\dots\dots\dots \text{cm}^2$

A 45

B 50

C 75

D 100

4 Investigate in R the sign of the function $f: f(x) = 8 + 2x - x^2$ showing that on number line, then find in R the solution set of the inequality : $8 + 2x - x^2 \geq 0$

5 If $x = -1$ is one of the two roots of the equation : $x^2 - kx - 6 = 0$, then $k = \dots\dots$

A 5

B - 5

C 6

D - 6

6 In $\triangle ABC$, $\overline{AD}$ bisects $\angle A$ internally and $AB > AC$, then : $DC \dots\dots DB$

A $>$

B $\geq$

C $<$

D $=$

7 The angle of measure 3932° lies in $\dots\dots\dots$ quadrant.

A first

B second

C third

D fourth

8 In the opposite figure :

$\overline{AB}$ is a tangent segment to circle M

$AB = 6 \text{ cm}$, $CM = 2.5 \text{ cm}$.

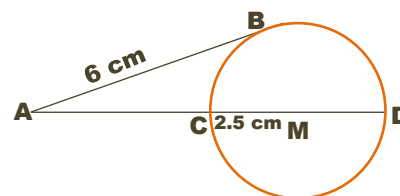
, then $AC = \dots\dots\dots \text{cm}$.

A 9

B 4

C 2.5

D 5



9 Find the general solution of the equation:

$\sin 2\theta = \cos \theta$, then find the value of θ , $\theta \in]0, \pi[$

10 In the opposite figure :

$x = \dots\dots\dots$ cm

- (A) 6 (B) $3\sqrt{2}$
(C) $3\sqrt{3}$ (D) 18

11 In the opposite figure:

$\overline{AB}$ is a tangent segment of a unit circle, then $OB = \dots\dots\dots$

- (A) $\sin \theta$ (B) $\cos \theta$
(C) $\csc \theta$ (D) $\sec \theta$

12 The function $f: f(x) = 3 - x$ is non - negative at $x \in \dots\dots\dots$

- (A) $] -\infty, 3[$ (B) $] - , 3]$ (C) $[3, \infty[$

13 In the opposite figure:

M and N are two intersecting circles at A and B, $C \in \overline{BA}$, $C \notin \overline{BA}$ Draw $\overline{CD}$ to intersects circle M at D, E where $CD = 9$ cm., $DE = 7$ cm.

Draw $\overline{CF}$ to touch circle N at F

[1] Prove that: $P_M(C) = P_N(C)$

[2] If: $AB = 10$ cm., find the length of each $\overline{AC}$, $\overline{CF}$

14 The degree measure of an inscribed angle opposite an arc whose length 5π cm. in a circle with radius 15 cm. equals

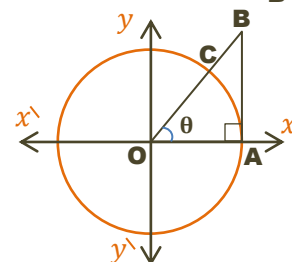
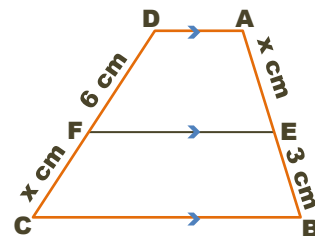
- (A) 120° (B) 60° (C) 30° (D) 90°

15 In the opposite figure:

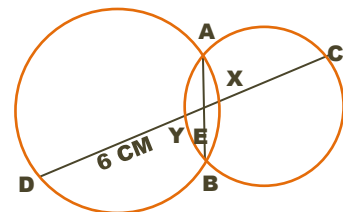
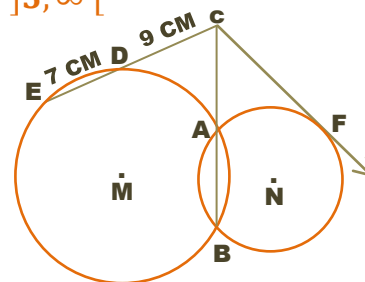
If $DY = 6$ cm. and $\frac{XE}{EY} = \frac{2}{3}$

, then $CX = \dots\dots\dots$ cm.

- (A) 2 (B) 3
(C) 4 (D) 5



- (D) $]3, \infty [$



16) In $\triangle ABC$, $AB = 8$ cm., $AC = 4$ cm., $D \in \overrightarrow{AC}$, $D \notin \overline{AC}$ where $CD = 12$ cm.

Prove that : $\overline{AB}$ touches the circle passes through the points B, C, D

17) If the function $f: f(x) = a \cos b x$ where $a > 0$ is a periodic function and its period

$\frac{\pi}{2}$ and its range $[-1, 1]$, then $\left| \frac{a}{b} \right| = \dots\dots\dots$

(A) $\frac{1}{2}$

(B) 1

(C) $\frac{1}{8}$

(D) $\frac{1}{4}$

18) In the opposite figure:

$\frac{AE}{EB} = \frac{2}{3} =$, then $FE = \dots\dots\dots$ cm.

(A) 9

(B) 11

(C) 13

(D) 15

19) If $\triangle ABC \sim \triangle E$, $m(\angle A) = 50^\circ$, $m(\angle E) = 60^\circ$, then $m(\angle C) = \dots\dots\dots$

(A) 110°

(B) 70°

(C) 100°

(D) 120°

20) In the opposite figure:

$\overline{AC}$ bisects $\angle BAD$, D is the midpoint of $\overline{EC}$

, $AC = \sqrt{6}$ cm., $AD = 3$ cm.

, $AB = 6$ cm., then $DF = \dots\dots\dots$ cm.

(A) 2

(B) 3

(C) 3.5

(D) 4

21) In the opposite figure:

ABCD is a square of side length 6 cm.

, $DE = EF = FC$

, then the area of (polygon XYFE): $\dots\dots\dots$ cm²

(A) 6

(B) 8

(C) 10

(D) 12

22) If L, M are the two roots of the quadratic equation $x^2 + 1 = 0$, then $L^{2018} + M^{2018}$

(A) $-2i$

(B) $2i$

(C) -2

(D) 2018

23) If $\triangle ABC$ is right - angled triangle at angle C, $\sin A + \cos B = 1$ Find the value of $\sin 5A$

24) If one of the two roots of the equation $(x + k)^2 - 6x = 0$ is additive

inverse of the other, then $k = \dots\dots\dots$

(A) 6

(B) -6

(C) 3

(D) 9

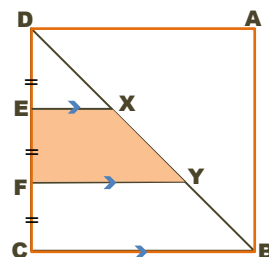
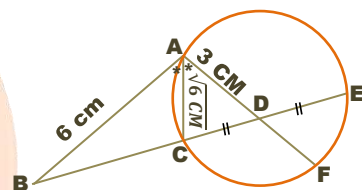
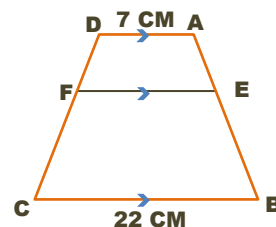
25) If the solution set of the inequality $x^2 - 10 < b x$ is $] -2, 5[$, then $b = \dots\dots\dots$

(A) -10

(B) -2

(C) 3

(D) 5



26 The quadratic equation whose roots $\frac{3}{i}, \frac{3+3i}{1-i}$ is

- (A) $x^2 - 3x + 9 = 0$ (B) $x^2 + 9 = 0$
(C) $x^2 + 9x + 9 = 0$ (D) $x^2 = 9$

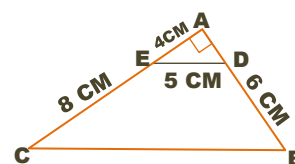
27 ABC is a triangle in which $AB = 8$ cm., $AC = 6$ cm.,
 $BC = 7$ cm. Draw $\overrightarrow{AD}$ bisects $\angle BAC$, $\overrightarrow{AD} \cap \overrightarrow{BC} = \{D\}$,
then $BD = \dots\dots\dots$ cm.

- (A) 3 (B) 6 (C) 4 (D) $\sqrt{07}$

28 In the opposite figure :

$\frac{DE}{BC} = \dots\dots\dots$

- (A) $\frac{1}{2}$ (B) $\frac{3}{4}$
(C) $\frac{1}{3}$ (D) $\frac{2}{3}$



29 If one of the roots of the equation: $3x^2 - (k + 2)x + K^2 + 2k = 0$ is the multiplicative
inverse of the other, then $k = \dots\dots\dots$

- (A) -3 or 1 (B) -3 or -1 (C) 3 or -1 (D) 3 or 1

30 If $10 \sin x = 6$ where x is the greatest positive angle, $x \in [0, 2\pi[$
, then the numerical value of the expression: $\sec(540^\circ + x)$ equals.....

- (A) $\frac{3}{5}$ (B) $\frac{-5}{4}$ (C) $\frac{5}{4}$ (D) $\frac{-5}{3}$

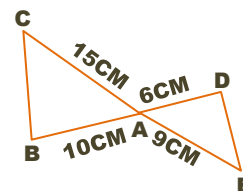
31 In the opposite figure:

$\overline{DB} \cap \overline{EC} = \{A\}$

, $AE = 9$ cm., $AB = 10$ cm., $AC = 15$ cm.

, $DA = 6$ cm., $a(\Delta ADE) = 36 \text{ cm}^2$

, then $a(\Delta ABC) = \dots\dots\dots \text{Cm}^2$



- (A) 60 (B) 75 (C) 100 (D) 225

32 The range of the function $f : f(x) = 4 \sin x$ where $x \in [0, \pi]$ equals

A $[0, 4]$

B $[0, 4[$

C $[-4, 0]$

D $[-4, 4]$

33 In the opposite figure:

$\overrightarrow{AB}$ touches the circle M at B

$\overrightarrow{AF}$ intersects the circle M at the two points C, F respectively. If $AC = 3$ cm.

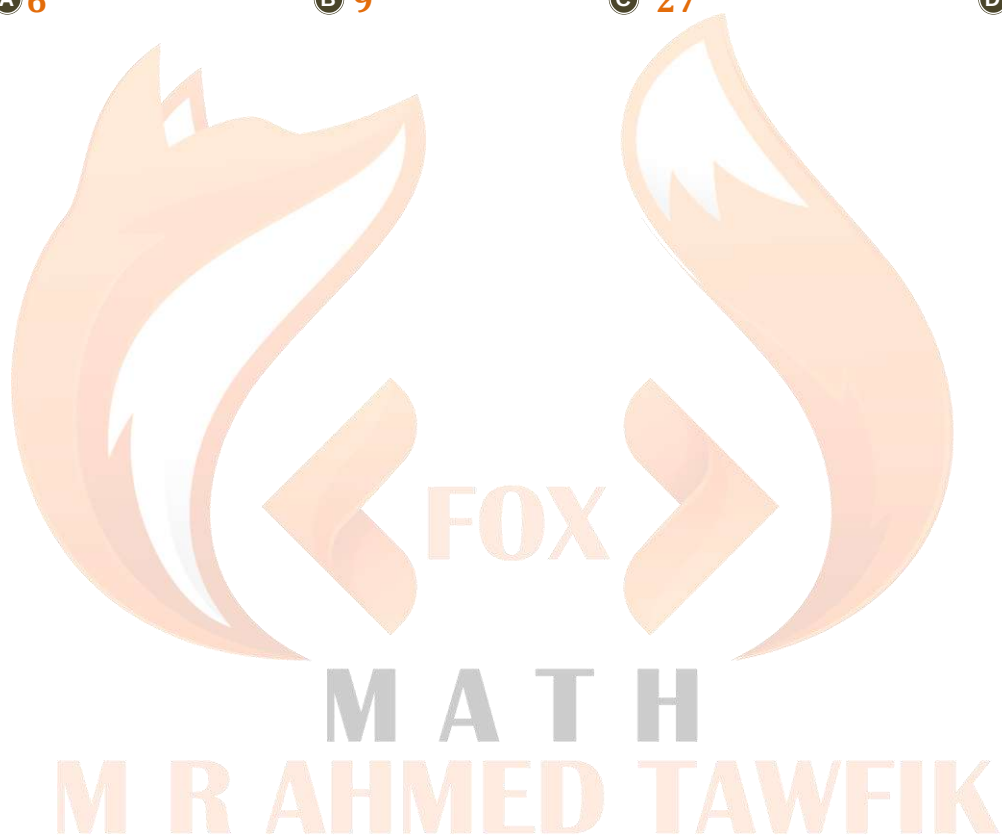
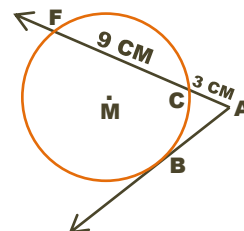
, $CF = 9$ cm., then $P_M(A) = \dots\dots\dots$

A 6

B 9

C 27

D 36



TEST

5

Answer the following questions :



1 In the opposite figure :

If $\overline{BE} \parallel \overline{DC}$, then $\frac{\text{area of } \triangle ABE}{\text{area of trapezium BCDE}} = \dots\dots\dots$

A $\frac{25}{81}$

B $\frac{3}{5}$

C $\frac{19}{16}$

D $\frac{9}{25}$

2 In the opposite figure:

$\sin(\tan^{-1}(\frac{15}{12})) = \dots\dots\dots$

A $\frac{5}{12}$

B $\frac{5}{13}$

C $\frac{12}{13}$

D 13

3 In the opposite figure:

The radius of circle M is 5 cm.

$\overline{AD}$ is a tangent at D, $AD = 12$ cm.

Find the length of $\overline{AC}$

4 If L, M are the two roots of the equation: $x^2 + 3x - 4 = 0$, then $LM = \dots$

A 3

B -3

C 4

D -4

5 The solution set of the equation: $x^2 + 9 = 0$ in R is.....

A $\{-2\}$

B $\{3\}$

C $\{-3, 3\}$

D $\emptyset$

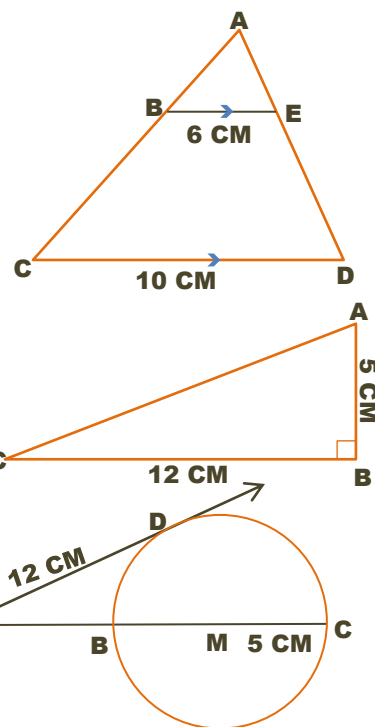
6 If S_1 is the solution set of the inequality : $x^2 - x - 2 \leq 0$ and S_2 is the solution set of the inequality: $x^2 + x - 2 \leq 0$, then $S_1 \cap S_2 = \dots\dots\dots$

A $\emptyset$

B $[-2, 2]$

C $[1, 1]$

D $\mathbb{R} -] - 1, 1[$



7 In the opposite figure:

If $\overline{DE} \parallel \overline{BC}$, $DE = y$ cm.

, $BC = x$ cm. and $2x^2 - 3xy - 5y^2 = 0$

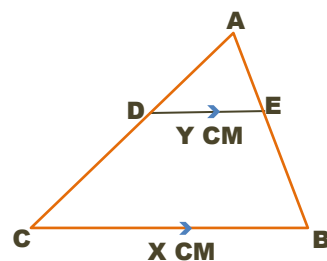
, $AB = 10$ cm., then $EB = \dots\dots\dots$ cm

(A) 3

(B) 4

(C) 6

(D) 8



8 The angle with measure 585° in standard position is equivalent to the angle with measure

(A) $\frac{1}{4}\pi$

(B) $\frac{5}{4}\pi$

(C) $\frac{3}{4}\pi$

(D) $\frac{7}{4}\pi$

9 If $\triangle ABC \sim \triangle XYZ$ and $AB = 3XY$, then $\frac{a(\triangle XYZ)}{a(\triangle ABC)} = \dots\dots\dots$

(A) $\frac{1}{3}$

(B) $\frac{1}{9}$

(C) $\frac{4}{1}$

(D) $\frac{9}{1}$

10 In the opposite figure:

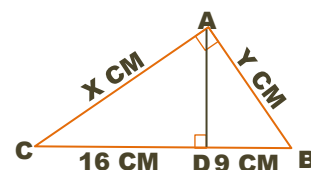
$\frac{y}{x} = \dots\dots\dots$

(A) 1

(B) $\frac{4}{3}$

(C) $\frac{3}{4}$

(D) 2



11 The function $y = \sin\left(\frac{\pi}{4} + x\right)$ has maximum value at $x = \dots\dots\dots$

(A) $\frac{\pi}{2}$

(B) $-\frac{\pi}{2}$

(C) $\frac{\pi}{4}$

(D) zero

12 If L, M are the two roots of the equation : $x^2 - 3x + 5 = 0$

[1] Form the equation whose roots are: $\frac{L}{m}, \frac{m}{L}$

[2] Find the numerical value of the expression $(L^2 + 3M)^2$

13 The sign of $f: f(x) = -5x = x$ is negative at $\dots\dots\dots$

(A) $x > -5$

(B) $x < -5$

(C) $x > 0$

(D) $x < 0$

14 In the opposite figure :

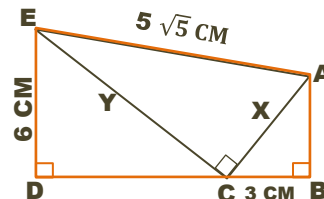
$x + y = \dots\dots\dots$ cm.

(A) 12

(B) 15

(C) 18

(D) 21



15) If $\overrightarrow{AB}$ is a tangent to a circle at B, $\overrightarrow{AC}$ intersects the circle at C, D where $C \in \overline{AD}$, $AC = 3$ cm. $AB = 6$ cm., then $CD = \dots\dots\dots$ cm.

- (A) 6 (B) 9 (C) 12 (D) 15

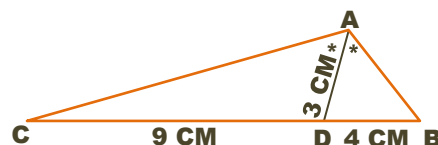
16) If $\sin \theta = \frac{4}{5}$ where $90^\circ < \theta < 180^\circ$ Find the value of :

$$\sin (180^\circ - \theta) + \tan (360^\circ - \theta) + 2 \sin (270^\circ - \theta)$$

17) In the opposite figure :

$$AB \times AC \dots\dots\dots \text{cm}^2$$

- (A) 36 (B) 45
(C) 12 (D) 27



18) In circle M, if two chords $\overline{AB}$ and $\overline{CF}$ intersecting at D, then

- (A) $P_M(D) = (AB)^2 - r^2$ (B) $AD \times DB = AM \times MB$
(C) $P_M(D) + AD \times DB = \text{zero}$ (D) $P_M(D) = CD \times DF$

19) If $x = \frac{13+13i}{5+i}$, $y = \frac{5+i}{1+i}$ find $x + y$

20) If $\tan (4 \theta) = \cot (5 \theta)$, then $\sin (3 \theta) = \dots\dots\dots$ where 3θ is the measure of acute angle.

- (A) $\frac{1}{2}$ (B) 1 (C) -1 (D) $\frac{\sqrt{3}}{2}$

21) If the degree measure of an angle is $64^\circ 48'$, then its radian measure is

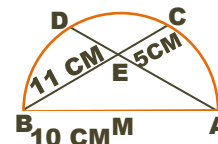
- (A) 0.18^{rad} (B) 0.36^{rad} (C) 11.3^{rad} (D) $\frac{9}{25} \pi$

22) In the opposite figure:

The radius length of semicircle (M) = 10 cm.

, then $ED = \dots\dots\dots$ cm.

- (A) $\frac{50}{13}$ (B) $\frac{55}{13}$
(C) $\frac{57}{13}$ (D) $\frac{59}{13}$



23 In the opposite figure :

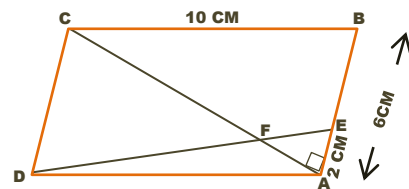
ABCD is a parallelogram in which

$AB = 6 \text{ cm.}, BC = 10 \text{ cm.}, m(\angle BAC) = 90^\circ$

, $E \in \overline{AB}$ such that: $AE = 2 \text{ cm.}$

, $\overline{DE}$ intersects $\overline{AC}$ at F

Prove that: $\triangle AFE$ is an isosceles triangle.



24 If the two roots of the equation: $ax^2 + bx + c = 0$ are equal in value but different in signs, then

(A) $c = 0$

(B) $a = 0$

(C) $b = 0$

(D) otherwise.

25 In the opposite figure:

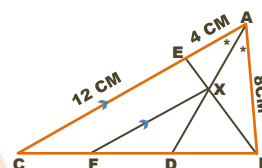
$\frac{DF}{BC} = \dots\dots\dots$

(A) $\frac{4}{3}$

(B) $\frac{2}{3}$

(C) $\frac{3}{5}$

(D) $\frac{1}{3}$



26 If the distance between point A from the centre of a circle equals 24 cm. and the power of this point with respect to this circle equals 176, then the radius length of this circle equals cm.

(A) $4\sqrt{47}$

(B) 400

(C) 20

(D) 38

27 The length of an arc opposite to a central angle of measure 150° in a circle with radius length 8 cm equals

(A) $\frac{20}{3}\pi$

(B) $\frac{17}{3}\pi$

(C) 8π

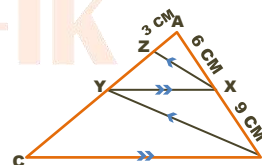
(D) 20

28 In the opposite figure :

$\overline{XY} \parallel \overline{BC}, \overline{XZ} \parallel \overline{BY}$

, $AX = 6 \text{ cm.}, XB = 9 \text{ cm.}, AZ = 3 \text{ cm.}$

, then the length of $\overline{ZC} = \dots\dots\dots \text{cm}$



(A) 4.5

(B) $15\frac{3}{4}$

(C) 15

(D) $12\frac{3}{4}$

29 If $\sin 2\theta = \cos \theta$, then θ could be equal $^\circ$

(A) 18

(B) 30

(C) 36

(D) 20

30 If $(2i)$ is a root of the quadratic equation : $x^2 + ax + b = 0$ where the coefficients of its terms are real numbers, then all the following are true except.....

- Ⓐ The other root of the quadratic equation is $(-2i)$
- Ⓑ The sum of the roots = zero
- Ⓒ The product of the roots = -4
- Ⓓ The discriminant of the quadratic equation $< \text{zero}$

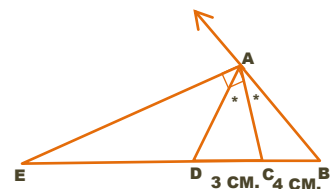
31 In the opposite figure:

$\overrightarrow{AC}$ bisects $\angle A$ of triangle ABD internally.

, $\overline{AE} \perp \overline{AC}$, $BC = 4 \text{ cm}$.

, $CD = 3 \text{ cm}$, then $BE:ED = \dots\dots$

- Ⓐ 7:4
- Ⓑ 7:3
- Ⓒ 3:4
- Ⓓ 4:3



32 If $f(x) = x + 2$, where $x \in]-4, 3[$, then $f(x)$ is positive at $x \in \dots\dots\dots$

- Ⓐ $]-\infty, -2[$
- Ⓑ $] -2, \infty[$
- Ⓒ $] -4, -2[$
- Ⓓ $] -2, 3[$

33 In the opposite figure :

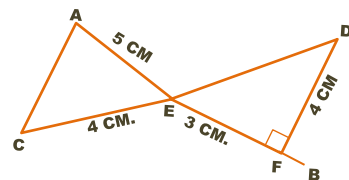
If $\overline{AB} \cap \overline{DC} = \{E\}$, $AE = 5 \text{ cm}$.

, $EF = 3 \text{ cm}$, $EC = 4 \text{ cm}$, $DF = 4 \text{ cm}$.

, $\overline{DF} \perp \overline{BE}$, the points A, B, C, D lie on the circumference of a circle

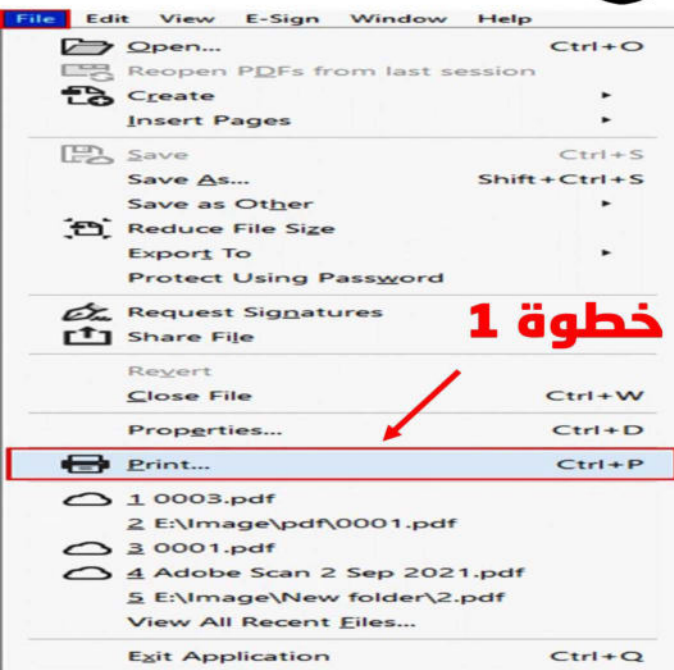
, then the length of $\overline{FB} = \dots\dots\dots$

- Ⓐ 0.5
- Ⓑ 1
- Ⓒ 1.5
- Ⓓ 2

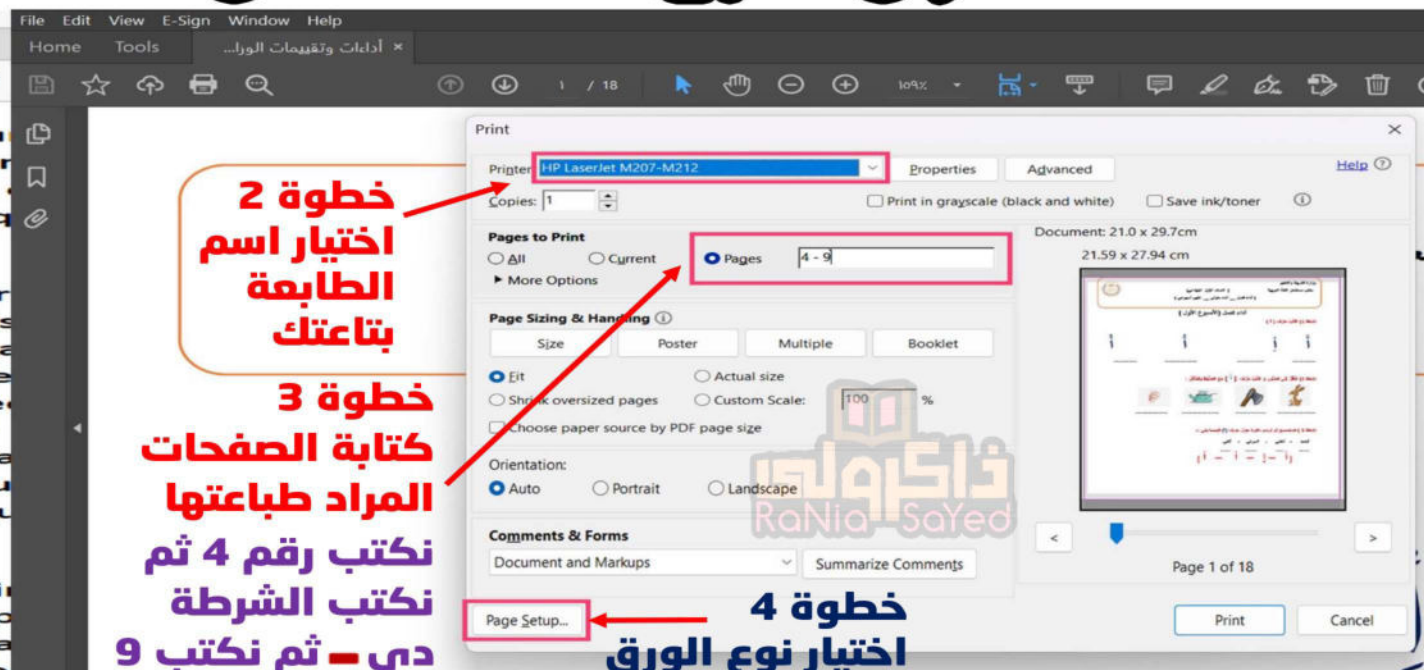


كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



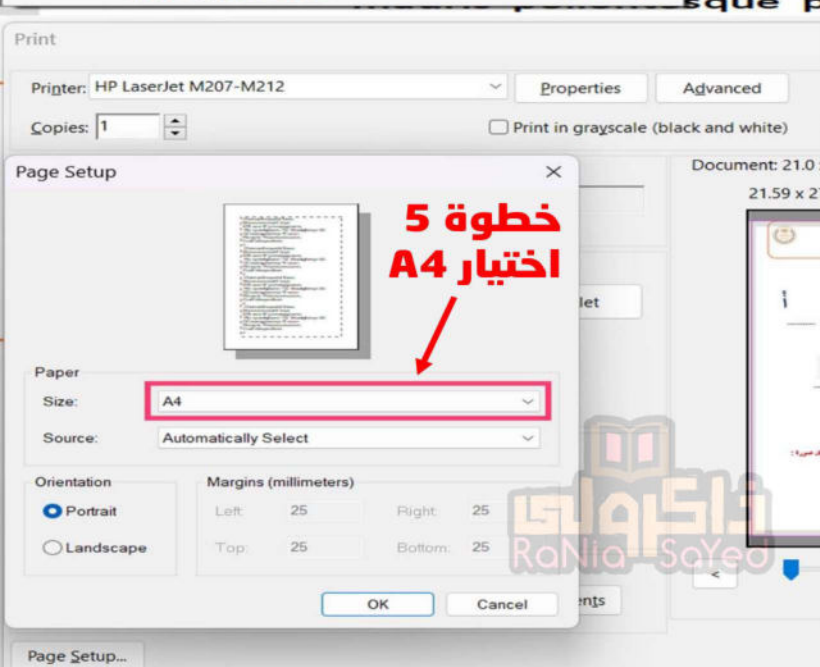
خطوة 1



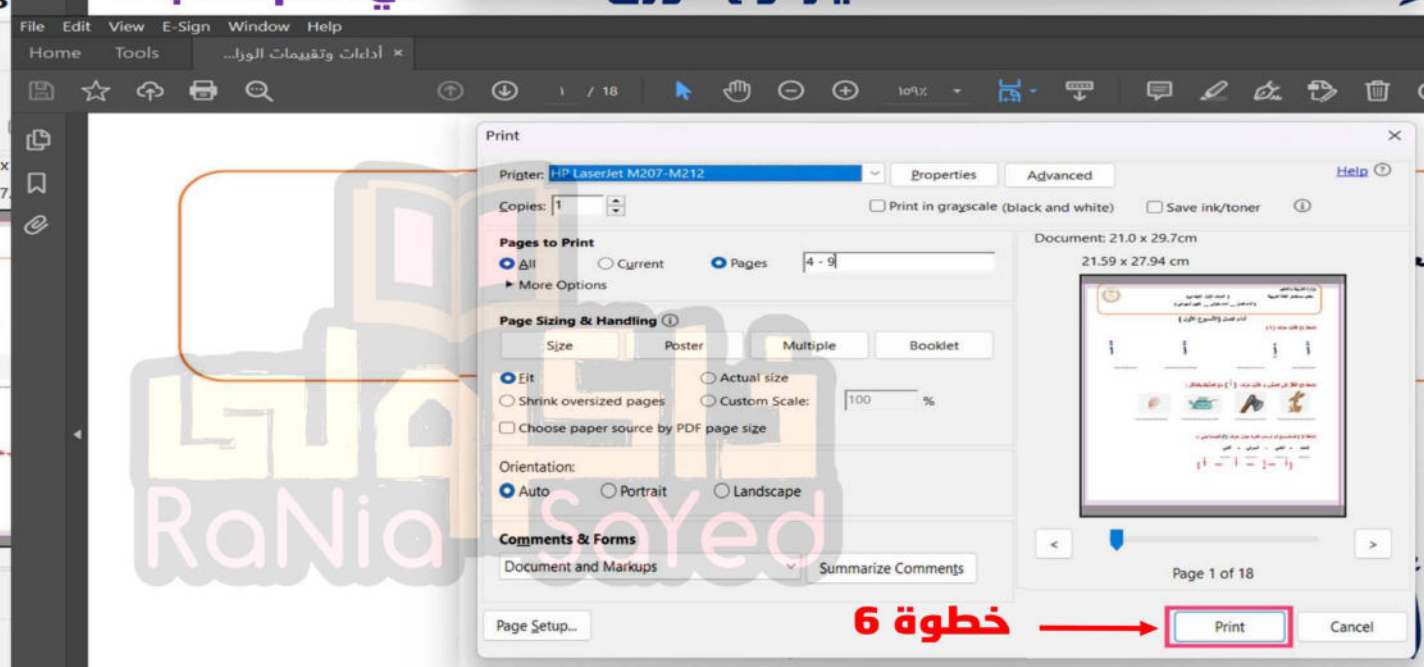
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6